THE IRON TRADE REVIEW

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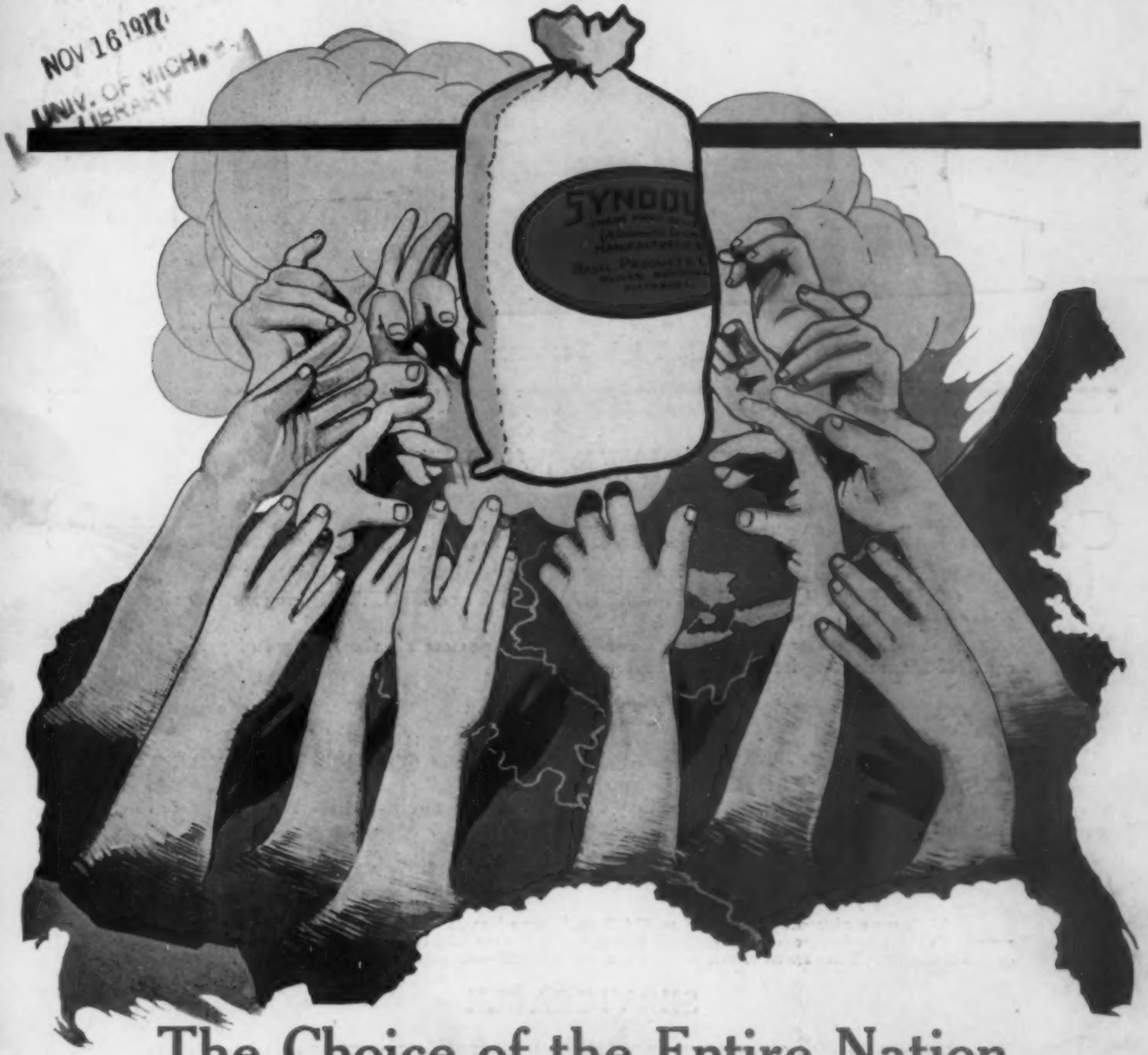

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Because of its thoroughly efficient and extremely economical characteristics, SYNDOLAG is the favorite furnace lining of foundrymen throughout the whole country. It is highly refractory, bonds readily, stands up well and ***stays.*** It greatly increases the number of heats without repairs.

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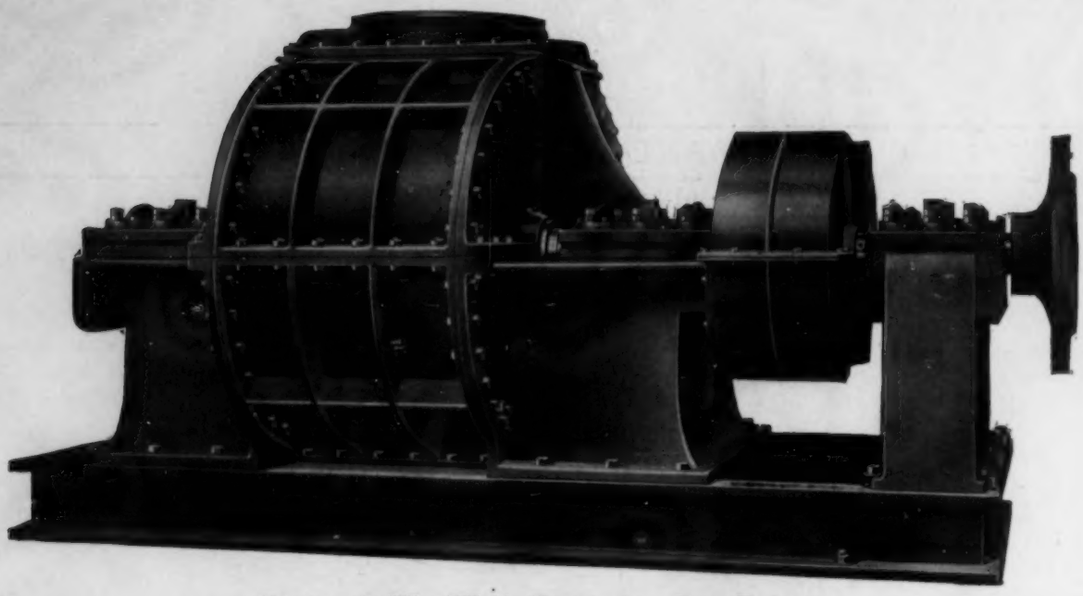

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CONNERSVILLE
Gas Pumps, Exhausters and Boosters

CONNERSVILLE GAS PUMPS, EXHAUSTERS and BOOSTERS are exceptionally advantageous wherever gas is handled.

Although they are the type of simplicity, they possess all the features of practical construction, resulting from years of experience.

CORRECT

The testimonials which we have received from users of CONNERSVILLE PUMPS, EXHAUSTERS and BOOSTERS, prove that "Connersville" products are correct both in design and service. Many state that they out-work as well as out-last the best pumps that they have ever been able to obtain.

EFFICIENT

Their range of capacity is from 25 to 40,000 cu. ft. per minute, and their pressure range is from ½ to 10 pounds. There is no lost motion—all motion is rotary, parts being carefully balanced and separated by accurately gauged clearances. There are no valves, no springs, and no internal parts requiring lubrication.

SERVICEABLE

The service to which CONNERSVILLE PUMPS, EXHAUSTERS and BOOSTERS can be put, is almost unlimited. They can be used for handling air, gas, steam, water and all other fluids.

These pumps may be driven by belt, by direct connected steam engine, by electric motor direct connected or through gear and pinion, or by silent chain.

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THE CONNERSVILLE BLOWER CO.

CHICAGO
929 Monadnock Bldg.

CONNERSVILLE, IND.

NEW YORK
114 Liberty St.

THE IRON TRADE REVIEW

Vol. LXI Cleveland, November 15, 1917 *No. 20*

Production is Seriously Curtailed

Coal and Coke Shortages Keep Plants Far Below Maximum Outputs Sorely Needed Under Present Conditions—Further Sweeping Announcements of Differentials and Prices on Finished Steel Made by Institute

ALARMING curtailment of production by inadequate supplies of coal and coke outrank all other factors of immediate importance in the iron and steel industry. Operating conditions in various districts have grown well nigh intolerable. Blast furnaces continue to be banked right and left, and the train of effects is running back to the steel works and rolling mills. Foundry production is suffering. In the Youngstown and valley districts mill and furnace production has been cut down from 25 to 50 per cent. The origin of the congestion continues to be laid both to sluggish transportation and to unstable labor. Production does not seem to be at fault since in some cases coke is being drawn and dumped on the ground because it cannot be moved. The seriousness of the situation has been enhanced by the approach of the season normally unfavorable for operating and traffic conditions. Renewed appreciation of the acuteness and the vital significance of present conditions is being shown by the government.

Pursuant with the adopted policy of the government to leave to the industry itself the fixing of prices and differentials on correlated products in line with the fixed base figures and established base standards, the Iron and Steel institute has made further sweeping announcements. These cover complete prices on boiler tubes, forging steel, bar iron, wire products, warehouse schedules and a long list of miscellaneous lines.

Heavy Flow of War Tonnage

A continuous stream of orders for government requirements remains the daily experience of the average mill. In addition to the huge tonnage of shell steel to domestic manufacturers, the producers are to be called upon to furnish large quantities to a score or more of Canadian works which have been awarded shell contracts by the United States government. These Canadian contracts are estimated at $50,000,000. Munitions steel allotments are heavy. A Chicago independent received 42,000 tons within the week, and a northern Ohio mill 30,000 tons, including slabs for ship steel. About 750,000 tons of 6-inch rounds are to be placed soon. Speeding up of ship construction by exempting such labor from military service will intensify demands upon the plate mills. Large orders for standardized material for ships continue to be placed.

Various buyers of semifinished material are pressing makers for concessions on higher priced contracts entered into some months back now that finished steel levels generally have been defined. They are insisting current shipments be billed at the agreed prices for sheet bars, slabs and billets. Producers are opposing strongly this effort at retroactive application of the government schedule.

Pig Iron is Scarcer

Inquiry for pig iron is considerably in excess of sales because of the growing scarcity of various grades. The week's bookings, however, have been large. Because regularity of furnace operations has been destroyed by coke conditions and war demands are growing, makers are more uncertain of their open tonnage to July 1. Consequently, they are selling cautiously. In certain specialties, where the supply is limited, buyers have been obliged to pledge that the metal will not be used for nonessentials of war. The recommended differentials generally are being followed by buyers and sellers. One of the results of the fixed prices is that makers are specializing on those grades which can be produced most profitably. Basic sales have been large especially in the east, where an eastern Pennsylvania platemaker closed for 45,000 tons for the first quarter. An interesting development in the eastern market is the appearance of the American Bridge Co. as a buyer of iron for its Pencoyd works. Heretofore, this plant has been supplied by Steel corporation furnaces in the Pittsburgh district. Basic sales to buyers in the St. Louis district total 25,000 tons. In all cases business is being entered at the agreed prices.

The Iron Trade Review

EDITORIAL

War Taxes and Trade Acceptances

WOULD broader adoption of the trade acceptance lessen the strain on business men when they come to pay their excess profits taxes? This levy will be retroactive, insofar as it includes earnings for the whole of 1917 whereas many firms had distributed or invested much of their profits prior to the enactment of this legislation. Therefore, the managements of many firms are wondering where the money is going to come from to pay their taxes. Some business houses expect to reduce their stocks, thus releasing capital from their business. Others expect to borrow funds to pay the tax. Still others expect both to reduce stocks and borrow funds. Some say the volume of their business is so large that they are already as far under obligation to the banks as they may go.

In at least some lines of trade, a movement toward reducing stocks already has set in, involuntarily on the part of the houses engaged, for they report that their collections are slowing up and funds which had been invested in stocks of goods now are beginning to appear in "receivables". It appears, however, that there will be rather a broad borrowing movement toward the close of the government's fiscal year, together with a general reduction in stocks for the purpose of meeting the war tax. Just how far the banks will be willing to extend themselves in view of the constant and heavy government financing is a matter for conjecture. And here is where the trade acceptance would be useful. For the past two years the federal reserve board any many bankers have been trying to interest business men in the use of this form of commercial paper. These efforts have not been accorded any great degree of success in the iron, steel and metal working industries. One reason for the slowness has been the fact that these industries have felt no need for the trade acceptance, money being easy and plentiful and collections prompt. Another reason has been the prejudice felt by many reputable and sound companies against putting their names down on a piece of paper that so closely resembles a promissory note, although in reality it is a credit instrument whose function differs widely from the note.

The theory of the acceptance is becoming widely known, thanks to the consistent campaign carried on by many banks, publications and trade associations. The trade acceptance is simply a draft for not more than 90 days sent by a seller to a buyer with the invoice of goods shipped. The buyer accepts this draft by writing his name across it, returning it to the seller, who may discount it at a low rate at his bank, thus realizing cash immediately from his sale and freeing his working capital. The bank may rediscount the paper at the federal reserve bank, which in turn is empowered to issue currency against this form of paper, representing as it does an actual sale of material.

The potentialities thus contained in the federal reserve system to create an elastic credit issue, which would contract and expand with the varying needs of business, are apparent. This in itself would be of assistance to those who want to borrow money at times when the money market otherwise would be tight. But, laying aside theory, it is clear that the business man whose sales are made through trade acceptances will be in a much better position, when the tax time comes around, than he whose capital is tied up in the form of a number of open book accounts.

A Much Needed Remedy

A MOMENTOUS question is before the President; it is not a sensational matter but it may mean the difference between success and failure of administration of the resources of the war. War is the opposition of brain against brain as well as of steel against steel. Modern warfare is conducted along scientific lines; but science alone cannot win. Science must have the backing of business ability of the highest quality in this land of big business. Business means co-ordinated industry directed by established system which comes only from years of development. To have co-ordinated industry it must have for its leaders men trained in the school of great constructive business development. It has been demonstrated repeatedly that in war the fewer the leaders the better and more effective are the results. The war industries board apparently has had too many leaders who have not been trained that way, trying to co-ordinate the work which in many respects is duplicated in the army and navy. It is clearly a one-type job and requires a real man to run it. The resignation of the competent late chairman brings this point home. The ill health that caused the resignation was ill health caused by lack of team work. One man can't be a team but he can, properly seated, drive a team and obtain team work. The President should answer this question by indicating to congress the wisdom of centralizing responsibility in operating the war machine and put the board on a plane worthy

The Iron Trade Review

EDITORIAL

of the business it must direct. Perhaps this can be best effected through creation of a cabinet office for the period of the war to control the manufacture and distribution of munitions.

Maximum Prices Not Competitive

ONE important feature of the regulation of iron and steel prices so far has been emphasized only in the case of scrap. The latter is the one material of the iron and steel industry so far affected by price regulation which not only has not been reduced but actually was at a lower level than the fixed prices at the time they became applicable. Up to the present time the scrap market has shown no tendency to move up to the government level. The explanation is furnished by a leading scrap dealer who says: "The law of supply and demand still holds good and scrap iron and steel prices will not move up to the government level until dictated by the working of this law."

That the government prices purely and simply are maximum prices, will become more apparent in other iron and steel commodities only as selling competition develops. So far there has been no incentive for cutting, since the sold-up condition of producers in practically all branches of the industry forces the buyer to regard the placing of his order as of first importance, with the matter of price a secondary consideration. Probably the first step toward a reversal of this situation back to normal methods of buying and selling will be in the form of concessions to meet competitive freight rates.

Pig Iron Makers Prove Loyalty

MONTHLY pig iron averages for October have been announced in the usual channels at $36.30 for bessemer and $33 for basic. The transactions upon which these averages were based involved approximately 100,000 tons, of which about two-thirds was bessemer and one-third basic iron. This represented the largest tonnage of iron that has moved in any single month since last June.

These facts are extremely interesting and significant. The price of $33 is that fixed by the government for basic iron. The price of $36.30 for bessemer is a tentative figure and is based on a 10 per cent differential over the level made applicable by the government to the former grade. This shows, then, that pig iron producers have followed promptly both the letter and the spirit of the government's terms. They have done so most generously, as is disclosed by the heavy tonnage which they disposed of, beginning immediately with the date the government prices were announced, which was Monday, Sept. 24.

The pig iron producers have set a splendid example. There are certain interests who are following neither the spirit nor the letter of government terms. The course is anything but the broad-minded policies which the iron and steel industry generally is pursuing with regard to the demands of war.

Freight Rates Control Market

FREIGHT rates, even more than in normal times, have been the determining factor in the geographical distribution of pig iron business since price regulation was applied Sept. 24. So far, makers in none of the districts have quoted lower than the new maximum figures. Business is so plentiful and the output sold up to such an extent that the furnaces have no incentive to solicit tonnage. As a result, the market to a greater extent than ever before has become a zone affair as determined by the location of the furnaces. Melters are going outside this zone only when they cannot get their iron from nearby sources. Many consumers have decided that the best policy to follow consists in placing iron with the nearest furnace that will quote.

The first indication of a reversion to more normal conditions of buying and selling than those now prevailing undoubtedly will be in the form of concessions from the maximum prices, to compensate for disadvantageous freight rates. For instance, Alabama makers, who have sold practically no iron in the eastern district since Sept. 24, will have to quote $29 or lower at the furnace, to compete in eastern Pennsylvania with eastern Pennsylvania furnaces. Virginia furnaces will have to quote $30 to $30.50 at the furnace to compete in Philadelphia with the eastern Pennsylvania makers.

Incidentally, when the old conditions of competition again become prevalent, southern furnaces will find that increased freight rates have moved them farther from the east and particularly, New England. The rail and water rate from Birmingham to Boston, for instance, recently was advanced to $6, an increase of no less than $1.75. At present freight rates, a quotation of $35, delivered Boston, would net approximately the following furnace prices: Eastern Pennsylvania, $32.75; Buffalo, $31.90; Virginia, $31.23; Birmingham, $29.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE AND IRON ORE PRICES ON PAGE 1080

PIG IRON

(Delivery this year.)

Bessemer valley	$36.30
Bessemer, Pittsburgh	37.25
Basic, Pittsburgh	33.95
Basic, eastern Pa.	33.00
Basic, Buffalo	33.00
Malleable, Pittsburgh	34.45
Malleable, Chicago	33.50
Malleable, Philadelphia	34.00 to 34.50
Malleable, Buffalo	33.50

GOVERNMENT SCHEDULE

1.75 to 2.25 silicon (No. 2 foundry, No. 2 plain, and No. 3 southern)	$33 furnace base
2.25 to 2.75 silicon (No. 2X, No. 1 Northern foundry, and No. 2 southern)	base plus 50c
2.75 to 3.25 silicon (No. 1X)	base plus $1.50
Over 3.25 silicon	$34.50, plus $1.00 for each ½ per cent of silicon.
No. 1X, Phila.	35.00 to 35.25
No. 2 foundry, Pittsburgh	33.95
No. 2 foundry, Cleveland	33.95
No. 2 foundry, Ironton	33.00
No. 1 foundry, Chicago	33.50
No. 2 foundry, Chicago	33.00
No. 2X foundry, Phila.	34.00 to 34.25
No. 2X foundry, N. J. tide	34.25 to 34.50
No. 2X foundry, Buffalo	33.00
No. 2 plain, Philadelphia	33.50 to 33.75
No. 2 plain, N. J. tide	33.75 to 34.00
No. 2 southern, Birmingham	33.50
No. 2 southern, Cincinnati	36.40
No. 2 southern, Chicago	37.50
No. 2 southern, Phila. del.	38.30 to 39.40
No. 2 southern, Cleveland	37.50
No. 2 southern, N. Y.	39.25 to 39.75
No. 2 southern, Boston	39.50
No. 2 southern, St. Louis	35.90
Virginia, No. 2X, furnace	33.50
Virginia, No. 2X, Phila.	36.77
Virginia, No. 2X, Jersey City	37.02
Virginia, No. 2X, Boston	37.27
Silveries, 8 per cent, furnace	46.00
Silveries, 8 per cent, Chicago	48.54
Low phos. standard, Phila.	55.00 to 56.00
Low phos. Lebanon furnace	50.00
Low phos., Pittsburgh	53.00
Charcoal, Superior, Chicago	37.50
Charcoal, Superior, Buffalo	39.75
Charcoal, southern, furnace	43.00

COKE

(At the ovens.)

Connellsville furnace	$6.00
Connellsville foundry	7.00
Wise county furnace	6.00
Wise county foundry	7.00
Pocahontas furnace	6.00
New River foundry	7.00
New River furnace	6.00

FERRO ALLOYS

Ferromanganese	$250.00
Spiegel, 20 per cent fur.	60.00 to 65.00
Ferrocarbon titanium, carloads, maker's plant	160.00
Ferrosilicon, 50 per cent, Pittsburgh	155.00 to 165.00
Ferrosilicon, 50 per cent, Pitts., 1st quarter	130.00 to 150.00
Bessemer ferrosilicon, 9 per cent.	$54.00
Bessemer ferrosilicon, 10 per cent.	55.00
Bessemer ferrosilicon, 11 per cent.	58.30
Bessemer ferrosilicon, 12 per cent.	61.60
Bessemer ferrosilicon, 13 per cent.	64.90

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

SEMIFINISHED MATERIAL

BILLETS

Open hearth, Pittsburgh	$47.50
Open hearth, Philadelphia	
Open hearth, Youngstown	47.50
Bessemer, Pittsburgh	47.50
Bessemer, Youngstown	47.50
*Forging, Pittsburgh	
*Forging, Philadelphia	

SHEET BARS

Open hearth, Pittsburgh	$51.00
Open hearth, Youngstown	51.00
Bessemer, Pittsburgh	51.00
Bessemer, Youngstown	51.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$57.00
Grooved skelp, Pitts.	2.90c
Sheared skelp, Pitts.	3.25c

SHAPES, PLATES AND BARS

Structural shapes, Pitts.	3.00c
Structural shapes, Phila.	3.185c
Structural shapes, N. Y.	3.195c
Structural shapes, Chicago	3.00c
Tank plates, Chicago	3.25c
Tank plates, Pittsburgh	3.25c
Tank plates, Philadelphia	3.435c
Tank plates, New York	3.445c
Bars, soft steel, Pittsburgh	2.90c
Bars, soft steel, Chicago	2.90c
Bars, soft steel, New York	3.095c
Bars, soft steel, Phila.	3.085c
Cotton ties, Pitts., Nov.	$2.15
Bar iron, Chicago	4.50c to 5.00c
Bar iron, Philadelphia	4.685c to 5.185c
Bar iron, Cleveland	4.25c to 4.50c
Bar iron, New York	4.695c to 5.195c
Bar iron, Pittsburgh	4.00c to 4.25c
Hard steel bars, Chicago	4.25c to 4.50c

RAILS, TRACK MATERIAL

Angle bars, Pittsburgh, base	3.75c to 4.00c
Angle bars, Chicago, base	3.25c to 4.00c
Standard bessemer rails, mill	$38.00
Stand. open hearth rails, mill	40.00
Light rails, 25 to 45 lbs., Chic.	70.00 to 75.00
Light rails, 25 to 45 lbs., Pitts.	75.00 to 85.00
Relayers, standard, mill	38.00 to 40.00
Relayers, light, Chicago	60.00
Relaying rails, light, St. L.	60.00 to 62.50
Spikes, railroad, Pittsburgh	5.00c to 5.50c
Spikes, railroad, Chicago	5.00c to 5.25c
Track bolts, Pittsburgh	6.50c to 8.10c
Track bolts, Chicago	5.25c to 6.50c
Tie plates, Chicago	$70.00 to 75.00

WIRE PRODUCTS

(To jobbers; retailers 5 cents more.)

Wire nails, Pittsburgh	$3.50
Coated nails, Pittsburgh	3.45
Plain wire, Pittsburgh	3.25
Galvanized wire, Pittsburgh	3.95
Polished staples, Pittsburgh	3.65
Galvanized staples, Pittsburgh	4.35
Barb wire, painted, Pittsburgh	3.65
Barb wire, galvanized, Pitts.	4.35
Cut nails, Pittsburgh	

CHAIN, PILING, STRIP STEEL

Chain, ¾ in. proof coil, Pitts. 9.00c

Sheet piling, base, Pittsburgh 4.00c to 5.00c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 7.00c.

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SHEETS

(In cents per pound.)

SHEET MILL BLACK.

No. 28, open hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c
No. 28, open hearth, Chic.	5.215c

TIN MILL, BLACK

No. 28, open hearth, Pitts.	
No. 28, bessemer, Pitts.	

GALVANIZED

No. 28, open hearth, Pitts.	6.25c
No. 28, bessemer, Pitts.	6.25c
No. 28, open hearth, Chic.	6.465c

BLUE ANNEALED

No. 10, open hearth, Pitts.	4.25c
No. 10, bessemer, Pitts.	4.25c
No. 10, open hearth, Chic.	5.715c to 6.215c
No. 10, open hearth, Phila.	4.435c

TIN PLATE

(Per 100 lb. box.)

Tin plate, coke base $7.75

IRON AND STEEL PIPE

Steel

Diameter in inches.	Black. Per cent off.	Galv. Per cent off.
⅜ to 3, butt	51	37½

Iron.

(Prices adopted June 30, 1917 and reaffirmed Nov. 7, 1917.)

Diameter in inches.	Black. Per cent off.	Galv. Per cent off.
⅛ to 1½, butt	33	17

BOILER TUBES

(Price adopted April 2, 1917.)

Steel, 3½ to 4½ inches, l. c. l.	34
Iron, 3½ to 4½ inches, l. c. l.	28

CAST IRON WATER PIPE

(Class B Pipe.)

Four-inch, Chicago	58.50
Six-inch and over, Chicago	55.50
Four-inch, New York	59.50
Six-inch and over, New York	56.50
Four-inch, Birmingham	48.00
Six-in. and over, Birmingham	45.00

Class A pipe is $1 higher than Class B.

HOOPS, BANDS, SHAFTING

Hoops, Pittsburgh	5.25c to 6.00c
Bands, Pittsburgh	5.10c to 5.85c
Shafting, Pittsburgh, carloads	17 off to list

RIVETS

Structural rivets, Pittsburgh	5.25c
Boiler rivets, Pittsburgh	5.35c
Rivets ⅞ in. and smaller, Pitts.	40 off

NUTS AND BOLTS

(Delivered within 20-cent freight radius.)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter.)

Rolled thread	40 off
Cut thread	35 and 2½ off
Larger or longer	25 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts.)

Rolled thread	40 and 10 off
Cut thread	40
Larger and longer	30
Cold pressed, semi-finished, hexagon nuts	50 and 10
Gimlet and cone point lag screws	45

NUTS

Hot pressed, square, blank	1.70 off
Hot pressed, square, tapped	1.50 off
Cold pressed, square, blank	1.25 off
Cold pressed, square, tapped	1.00 off
Hot pressed, hexagon, blank	1.50 off
Hot pressed, hexagon, tapped	1.30 off
Cold pressed, hexagon, blank	1.25 off
Cold pressed, hexagon, tapped	1.00 off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago.)

Quotations on leading products November 14, average for October, 1917, average for August, 1917, and average for November, 1916. Prices are those ruling in the largest percentage of sales at the dates named

	Prices Nov. 14, 1917.	Average prices Nov., 1917.	Aug. 1917.	Nov., 1916.
Bessemer pig iron, Pittsburgh..	$37.25	$37.25	$55.55	$30.35
Basic pig iron, Pittsburgh.....	33.95	33.95	52.75	25.95
*No. 2 Foundry pig iron, Pitts.	33.95	33.95	55.55	26.76
*No. 2 Foundry pig iron, Chic.	33.00	33.00	55.00	25.00
Lake Superior Charcoal, Chicago	37.50	37.50	59.50	21.95
Malleable, Chicago	33.50	33.50	55.00	25.00
**Southern, No. 2, Birmingham.	33.00	33.00	48.00	22.00
*Southern Ohio No. 2, Ironton.	33.00	33.00	55.00	30.00
Basic, eastern Pa.....	33.00	33.00	51.00	25.00
**No. 2X Virginia, furnace....	33.50	33.50	51.90	23.00
**No. 2X foundry, Philadelphia.	34.00	34.00	53.40	25.00
Ferro mang., delivered.....	247.50	302.00	400.00	160.00
Bessemer billets, Pittsburgh....	47.50	58.75	93.00	52.00
Bessemer sheet bars, Pittsburgh	51.00	65.50	96.00	52.00
Open hearth sheet bars, Pitts..	51.00	65.50	96.00	52.00
Open hearth billets, Pittsburgh.	47.50	58.75	93.00	52.00
Steel bars, Pittsburgh.....	2.90	2.90	4.00	2.78
Steel bars, Chicago.....	2.90	2.90	4.50	2.90
Iron bars, Philadelphia.....	4.435	4.935	4.914	2.659
Iron bars, Cleveland, local del'y	4.25	4.50	4.75	2.70

	Prices Nov. 14, 1917.	Average prices Nov., 1917.	Aug. 1917.	Nov., 1916.
Iron bars, Chicago mill.....	$4.50	$4.50	$4.50	$2.52
Beams, Chicago	3.00	3.00	4.95	3.00
Beams, Pittsburgh	3.00	3.00	4.50	2.88
Beams, Philadelphia	3.185	3.185	4.914	3.059
Tank plates, Pittsburgh.....	3.25	3.25	8.80	3.35
Tank plates, Chicago.....	3.25	3.25	9.60	3.45
Tank plates, Philadelphia.....	3.435	3.435	10.164	3.909
Sheets, blk., No. 28, Pittsburgh	5.00	7.75	9.00	3.67
Sheets, blue anld., No. 10, Pitts.	4.25	7.855	8.50	3.30
Sheets, galv., No. 28, Pittsburgh	6.25	8.815	10.25	5.07
Wire nails, Pittsburgh.....	3.50	3.90	4.00	2.85
Connellsville fur. coke.....	6.00	6.00	10.00	3.75
Connellsville fdy. coke.....	7.00	6.00	12.50	5.50
Heavy melting steel, Pittsburgh	30.00	31.50	34.60	20.55
Heavy melting steel, eastern Pa.	27.00	26.10	32.80	20.00
Heavy melting steel, Chicago...	28.50	27.00	33.10	19.35
No. 1 wrought, eastern Pa.....	35.00	40.80	46.24	23.50
No. 1 wrought, Chicago, net ton	31.25	31.88	35.40	21.25
Rerolling rails, Chicago.....	36.00	36.00	41.90	24.90
Car wheels, Chicago.....	27.00	25.88	30.70	15.95

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

(For Additional Prices See Page 1080)

Scarcity of Iron Grows With Sales

Enforced Curtailment of Output by Coke Shortages Complicates Situation—Makers Specialize on Profitable Grades—Large Inquiries Appear and Buying is Active—Heavy Basic Sales at Chicago and in East

Philadelphia, Nov. 12.—One of the results beginning to make itself apparent under price regulation is the tendency of the furnaces to make the grades of iron yielding them most profit. Furnaces will produce the grades which they can make most economically without regard to market necesities. Malleable at present cannot be obtained in the east and the likelihood is that as long as $33.50 remains the price, makers will produce only enough to fill orders already on their books. Consumers here during the past few weeks have been unable to obtain malleable east of Ohio and have been paying $33.50, furnace, or $37 to $37.50, delivered eastern Pennsylvania. Several round tonnages of Ohio malleable were sold on this basis during the past week. Eastern makers say their cost of making malleable is more than 50 cents above basic. It seems likely production in the east will be concentrated as far as possible on basic, low phosphorus and foundry. For the first time in years the American Bridge Co. is in the market on an extensive scale for basic for its Pencoyd plant. This interest bought several thousand tons and some other grades which could be had for spot or nearby and it continues out for an indefinite tonnage at the rate of about 2000 tons a month. An eastern Pennsylvania platemaker purchased about 45,000 tons of basic during the week for first quarter. This, as well as the American Bridge Co. business, went at $33, eastern furnaces. In addition, some 5000 tons of basic were sold. A sale of 2000 tons of standard low phosphorus iron was made at $53, furnace. Foundry sales were much less than the inquiry and nearby lots are scarce. Virginia furnaces have been selling odd carloads of high manganese iron at premiums of 50 cents for the first 0.50 unit of manganese in excess of 1 per cent, and $1 for each 0.50 unit above 1.50 per cent. The Norfolk & Western railroad is in the market for 5100 tons of various grades for first half. The Pennsylvania railroad inquiry for 13,000 tons remains open.

Buyers Not so Anxious

Boston, Nov. 12.—On the whole, local trading in pig iron is quieter than it has been. Melters are insisting on deliveries on old contracts and there is more or less inquiry for iron for the first quarter and half of 1918, but actual business is not heavy. There is fairly good business in nearby iron, but sales rarely go above a carload lot and the purchases are for the most part merely for piecing-out depleted lines. There is a feeling locally that forward buying is not going to be as heavy from now on as it has been during the past year and a half. The fixing of coke prices, it is believed will result in more generous supplies for the furnaces, thus removing one of the obstacles in the path of a larger iron production. Since iron prices are fixed, buyers feel that no pecuniary advantage is to be gained by buying more than actual needs; it is not believed the government will permit of higher prices and practically the only important reason why buyers should take on more than they have a use for is the comfort to be gained from having the raw material in their yards. One inquiry for a good-sized lot of 4 to 5 per cent silicon iron is pending. The

freight rate on Virginia iron to Boston common rate points now is $3.77, against $3.25 prior to Nov. 1; the rate on Alabama iron is $6 to Boston and Providence and $6.40 to interior points, water and rail, and the same rate prevails on all rail shipments. There is no change in Buffalo and eastern Pennsylvania rates.

Increased Scarcity Shown

New York, Nov. 13.—Increasingly active buying of pig iron in the east during the past few weeks has served to emphasize the pronounced scarcity of all grades. Furnaces which only a week ago were accepting orders for small tonnages for prompt and nearby, now have difficulty to find space for such tonnages. Many consumers, unable to get iron for immediate use from their regular sources of supply, are scouring the market. Offers by makers are confined almost entirely to next year. Bookings of foundry for first half have been large. One eastern Pennsylvania furnace reports numerous sales totaling about 5000 tons during the week. The Singer Mfg. Co., Elizabeth, N. J., is understood to have enlarged its first half purchases to 5000 tons, of which 2000 were taken by a Buffalo furnace and 3000 by an eastern Pennsylvania maker. The American Brake Shoe & Foundry Co. has purchased some foundry and still is in the market. Southern iron has not figured in this district for some time, although some consumers are willing to purchase Alabama iron at $33, furnace, for 1.75 to 2.25 per cent silicon foundry. This business has not been accepted, due to the lack of assurance as to deliveries. Iron other than foundry has not figured to any notable extent in the business during the week. Sales of 2000 to 3000 tons of standard low phosphorus for first half were made at $53, furnace. Numerous inquiries for low phosphorus are out, including 2000 tons for an eastern Pennsylvania consumer; 1000 tons for Detroit; 2000 tons for Pittsburgh district, etc. Some Ohio malleable has been sold here during the week at $33.50, furnace, equivalent to about $37.50, delivered.

Transportation Situation Serious

Pittsburgh, Nov. 13.—An extremely serious transportation situation has resulted in a sharp curtailment of blast furnace production in nearby districts. Car congestion in the coal and coke fields has reached alarming proportions and as a consequence pig iron manufacturers are suffering severely from a shortage of fuel. A number of furnaces in the valleys have been compelled to bank during the past week and some of those in the Pittsburgh district are operating only on a hand-to-mouth basis. It is hoped to alleviate the situation by further reducing shipments of so-called non-essential freight. The outlook for marked improvement in the immediate future, however, is not bright. Transportation lines, in addition to finding themselves without sufficient rolling stock and motive power, are handicapped by a shortage of labor. It is not believed that the expiration of the lake coal priority order on Thursday of the present week will afford much relief. The position of blast furnace interests is further complicated by reason of the embargoes against shipments to some points. Inquiries for the various grades are numerous, but sales are limited. Producers are well committed for last quarter and first half. The greatest inquiry is in basic. Bessemer iron also is being sought freely. Limited tonnages of foundry were sold during the week. Among these were lots of 300 tons and 400 tons of No. 2 sold to a Pittsburgh district consumer for first half at $33, valley. A carmaker in the Pittsburgh district bought several thousand tons of malleable. Some furnaces before quoting inquire of prospective buyers as to whether or not they are engaged on government contracts. Most producers will sell only to their regular customers, or to those doing government work.

Virginia Rates Up

All freight rates on pig iron from Virginia producing points to eastern consuming centers have been advanced 52 cents per ton. The new rates for a number of the Virginia furnaces to the principal consuming centers are:

Philadelphia	$3.27
Jersey City, Newark and Brooklyn	3.52
New England and Hudson river points	3.77

Buffalo Production Crippled

Buffalo, Nov. 13.—Considerable liveliness is manifested in the iron market in this district at the present time. Inquiry is heavy, and from all directions but with only a small tonnage available from the Buffalo dstrict for early shipment. Practically all furnace companies now are out of the market. Most of the furnaces are making some sales for 1918, but are not urging buyers to close. One furnace which has not been strongly in the market for some time sold about 2500 tons last week, principally to old customers. The iron sold was No. 1 foundry and No. 2X foundry at $34.50 and $33.50, respectively. Some of this iron was from the company's furnace in an eastern part of the state which has been forced out of blast by inability to obtain coke. It will remain out two or three weeks. Another interest disposed of 2000 tons of foundry. The week saw the re-entry into the market to a limited extent of a furnace interest which has remained out most of the summer, due to its sold-up condition. A small tonnage was sold for the third quarter of 1918. Most of the furnace's tonnage, however, in the future, will find its way to the company's own mills. The coke situation continues very bad. The shortage both for furnace and foundry is being severely felt. Two furnaces are idle in the Buffalo district in addition to the one in the eastern part of the state. Another furnace will be out of blast next week, it is believed, due partially to this cause and to the fact that it must undergo certain repairs. The pressure on furnaces for shipments of iron is severe, but with a limited production the producer is trying to pro-rate tonnage.

Chicago Inquiry Heavy

Chicago, Nov. 13.—Increasing inquiry is being received for all grades of pig iron for first half. It is coming from all classes of users and is widely scattered. Sales have been considerable since the leading merchant interest has the product of a new furnace from February to July to dispose of. About 25,000 tons of basic were sold last week for delivery in the St. Louis district in two lots of approximately 10,000 tons each, and one smaller tonnage. On this business $33, furnace, was done. The fuel situation is decidedly better and production is increasing.

Unsold Iron Reduced

Cleveland, Nov. 13.—How much tonnage of new business in pig iron has been booked recently by some of the furnaces which have had any considerable amount of metal to offer to July 1, 1918, is displayed by the extent to which this capacity now is filled. A leading local seller with a number of furnaces to draw against has less than 10 per cent unsold to the midyear. New inquiry remains active and sales are in good tonnage. A Bedford consumer is out for 8000 tons of four grades of high silicon foundry iron for first half. The N. & G. Taylor Co. wants 6000 tons of December-April shipment. Malleable continues to be sought freely and is scarce. Bessemer ferrosilicon also is in scant supply and some business is

going unsatisfied. Charcoal iron is another grade that is exceedingly difficult to get except for war purposes. Foundries making automobile parts have been obliged in some cases to make affidavit that the material would not go into pleasure cars before the metal was sold to them. Southern Ohio makers of silveries who before the government differentials were announced put out a first half schedule which proved to be $1 to $1.50 above the official level, have harmonized their quotations with the latter.

Foundries Drop Complaints

Cincinnati, Nov. 12.—A diminishing number of complaints are made by foundry melters who are receiving iron billed them at old contract prices. The furnaces are using every effort to fill former contracts, although some of this iron was bought far enough back to be billed below the agreed price of $33 at furnace. A few cancellations were asked for but the number was small. These naturally came from consumers who had overbought at the former quotations. The majority of foundrymen were content to let their supply of iron come forward and now they are glad of this decision. The shortage of iron is a subject that is worn threadbare, but is one that is now being considered very seriously by foundry melters who are conversant with the situation.

Buyers Are More Active

St. Louis, Nov. 10.—Buyers and sellers of pig iron are much relieved because the differentials finally have been settled. A cloud has been lifted from the situation and already there is a general revival of business. Inquiries this week have been more numerous and sales involving about 8000 tons are reported. The only factor holding back really large transactions is the continued inability of dealers to get the iron. Some offerings of northern iron were reported and also some scattering resale tonnages, but producers in the Birmingham district when this center mainly is supplied, are adamant when it comes to committing themselves for any delivery. Both furnaces and foundrymen in this district are confronted with an extremely trying coke situation which may mean further reduction in output. Mills, foundries and manufacturers generally in this district who use pig iron are loaded up with business and the rate of consumption is well up to the recent record levels. Producing companies in this district are all sold up far ahead, and are strictly out of the market at this moment.

Car Congestion is Acute

Coke Conditions Reach Serious Stage Because of Lack of Loading Facilities—Fuel Being Stacked on Ground

Pittsburgh, Nov. 13.—Car congestion in the Connellsville regions has greatly increased the seriousness of the coke situation. Great numbers of cars are standing loaded with fuel, due to a lack of locomotive power and railroad labor. It is reported that a large number of cars which were loaded last week still remain in the regions. This has been one important factor in curtailing fuel supplies at furnaces during the past week. The coke output is so much greater just at present than the available car supply that fuel is being drawn and loaded on the ground. The car supply last week was approximately 60 per cent on the Monongahela railroad and the general average was 70 per cent, which compares with 50 per cent and 60 per cent the preceding week. Furnaces are exerting themselves to get fuel and partly because of the car situation are receiving only a small portion of their requirements. Owing to this difficulty, it is not yet possible to say what the effect will be of the ruling handed down last week by the federal fuel administration establishing differentials on coke.

The ruling that any commission paid to middlemen shall be paid by producers and shall not be added to the prices established apparently came as a disappointment to producers. Production for the week ending Nov. 3 was 332,423 tons, as compared with 305,980 tons for the previous week, according to *The Connellsville Courier*.

Making Foundry Sales

Cleveland, Nov. 13.—Some further sales of foundry coke at $7, Connellsville ovens, have been closed since the formal action was taken at Washington fixing this grade at that level. Previous sales closed provisionally at $7, ovens, also have been reduced to formal contracts. The question of by-product coke still is an open matter. Some producers have been selling foundry coke of this character at $7, Connellsville, plus the freight to their plant, or $8.75, this district. One seller disposed of 2000 tons of beehive foundry coke for all 1918 shipment at $7, Connellsville, subject to revision of the fixed price.

Foundry Situation Looks Better

Cincinnati, Nov. 12.—The advance to $7 allowed for foundry coke has stimulated some interest in the Connellsville field. Thus far the Wise county and New river operators have not solicited any business at the new quotation. The differential between 48-hour and 72-hour grades of $1 a ton is bound to be of benefit to the foundry coke consumers and the tense situation now existing as to a supply for foundries who have not bought ahead is apt to be relieved. Pocahontas operators are still bending their energies to supplying their customers and have no room just now for new orders. The situation is more settled and consequently more favorable, but the same old complaint as to the scarcity of labor is said to be one of the principal difficulties in the way of an increased output.

Situation is Tense

St. Louis, Nov. 10.—Dealers here describe the coke situation as confused and extremely unsatisfactory. There is an active inquiry, but supplies are lacking. Certain foundrymen are facing a critical situation. Their stocks are at the vanishing point and there have been numerous appeals this week for car lots to tide over with. Some plants in Kansas are in dire need and are imploring a few cars regardless of price. A Canadian plant making 8-inch shells sought two cars of coke to fill a requirement described as "ultra pressing". The eastern ovens which habitually deal with this center are not quoting. Ovens in the St. Louis district, with the exception of the Laclede Gas Co., are unable to help out buyers. The Laclede plant has disposed of fair tonnages this month on the government basis.

Revise List Prices

Revised list prices on double bead eaves trough were put into effect Nov. 1, following their adoption by the Sheet Metal club at Atlantic City recently. The new prices on lap-joint trough No. 28 gage are 20 cents for 3-inch, 21 cents for 3½-inch, 23 cents for 4-inch, 25 cents for 4½-inch, 26 cents for 5-inch, 30 cents for 6-inch, 35 cents for 7-inch, 39 cents for 8-inch, 43 cents for 9-inch and 47 cents for 10-inch. On slip-joint, No. 28 gage, they are 1 cent higher than lap-joint from 3-inch to 5-inch, inclusive, and 2 cents higher from 6-inch to 10-inch, inclusive.

Place Shell Bar Orders

Chicago Mill Receives 42,000 Tons—Shipbuilders Want Huge Quantities of Bar Mill Products of All Kinds

Chicago, Nov. 13.—Although the leading interest in Chicago has not been notified of its allotment, an independent steelmaker has been given 42,000 tons of 6-inch round-cornered bars for munition making and the government is asking it to take further tonnage, to its ability to furnish material up to July 1, next. It is believed this tonnage is part of the 1,500,000 tons of which advance notice was given a short time ago by the Iron and Steel institute. Other government requirements are coming out gradually and a total of about 4000 tons of shipbuilding material has been placed with the leading independent to be furnished to fabricating shops in western territory. Government requirements and existing contracts are taking practically all the finished steel being made here and with additional shell bar orders, it is difficult to see how the ordinary consumer will be able to place contracts for his requirements. Hard steel bars rerolled from rails are somewhat weaker and some makers are quoting 4c, Chicago, while others are still asking 4.25c, Chicago. Comparatively little tonnage is being taken. With rerolling rails at a comparatively high price, it is difficult for the mills to reduce prices. Bar iron is in small demand. The trade believes a lower quotation will be decided on shortly, inasmuch as wrought scrap has been definitely fixed.

Shipbuilders' Demands Are Huge

Philadelphia, Nov. 12.—Inquiries for huge quantities of bar mill products continue to come out from Delaware river shipbuilders. The largest buyer is the American International Shipbuilding Corp. One inquiry calls for 316,000 pounds of ¼, ⅞ and 1-inch machine bolts; another for 450 kegs of ¾ and ⅝-inch machine bolts, and another for 688,000 pounds of boat spikes. Half of the material is wanted by Nov. 15; 25 per cent by the end of November and the remainder by Dec. 15. Other large buyers of machine bolts, track bolts, nuts, railroad and boat spikes, are the Merchant Shipbuilding Corp. and the Chester Shipbuilding Co. The market on some of these products is weaker. The American International Shipbuilding Corp. is distributing 6000 tons of rivets. Bar iron is weak. Where 4.50c and 4.75c base, Pittsburgh, recently took attractive orders, 4.25c or less now is quoted. Steel bars are somewhat easier to get and consumers inquiring for iron bars have been able to fill their requirements with the former at 2.90c, Pittsburgh base. Concrete bars, from shell discards and scrap, continue to be offered freely. The largest sale, 2700 tons, by the Bethlehem Steel Co., for power plant of the Philadelphia Electric Co. An export inquiry calls for approximately 3000 tons.

Bar Iron Sales Few

Pittsburgh, Nov. 13.—The few sales of bar iron in this district during the past week were negotiated principally at 4.50c, Pittsburgh. Mills are well sold up for the remainder of the year and have been compelled to forego attention to numerous inquiries for high grade bar iron, owing to the scarcity of muck bar. Sales of soft steel bars are extremely limited. Mills are busy on heavy government requirements. These are increasing to a greater extent than some makers had anticipated.

Shafting Inquiries Increase

Pittsburgh, Nov. 13.—An increase has been noted by makers in the number of inquiries for cold rolled shafting since the government established a level of 17 per cent off, base, Pittsburgh. There have been but few cancellations of contracts. Orders booked on old contracts are to be filled at their full prices, according to manufacturers. Interest has been manifested as to the effect on the demand for shafting resulting from the government order curtailing the output of pleasure automobiles.

Sell Hoops and Bands

Pittsburgh, Nov. 13.—Sales of small lots of hoops for last quarter were made during the past week at 6c, base, Pittsburgh, although a figure of 5.25c, mill, is quoted by some makers. Material at the lower price is reported to be extremely limited. Inquiry for bands is quiet. The prices quoted on bands remain unchanged at 5.10c to 5.85c, Pittsburgh.

Complete Cotton Tie Rolling

Pittsburgh, Nov. 13.—Some producers of cotton ties have practically completed their rolling for the season. Rolling on requirements for 1918 will be begun in January by some mills which are engaged steadily in producing cotton ties. The November price for ties is $2.15, Pittsburgh.

Heavy Sales

Of Spiegeleisen Totaling 18,000 Tons Made—Navy Takes Ferro

New York, Nov. 13.—Unusual activity characterized the market in spiegeleisen this week due to the closing of 1918 requirements by Corrigan, McKinney & Co. It is understood the former now has placed all of the 12,000 tons recently inquired for. The Whitaker-Glessner Co. bought 2000 tons for first quarter delivery at Portsmouth, O. It is believed both of these purchases were made at prices equivalent to slightly less than $60, furnace. Additional sales of approximately 4000 tons were made making the week's turnover about 18,000 tons. This business cleaned up the bulk of the pending inquiry and current demand is small. On the latter, the market may be quoted at $60 to $65, furnace.

F. W. Marshall & Co., Philadelphia, have taken an order from the navy department for 750 tons of ferromanganese for the navy yards. One-half is to be delivered immediately at $249, delivered; the remainder went at $249, furnace, and shipping instructions are to be given later. This was the principal business of the week. Several small tonnages for first quarter were sold at $240 to $250, delivered.

Ferroalloy Inquiries Increase

Pittsburgh, Nov. 13.—Makers of ferroalloys report that inquiries have increased since the government completed its price fixing program affecting iron and steel products. There does not seem to be any likelihood that levels for high grade alloys will be established by the government, but quotations on these products have become easier. Small prompt lots of ferromanganese were sold here during the past week at $250, delivered. Fair sized tonnages of 20 per cent spiegeleisen for both prompt and first half also have been made. Some makers continue to quote $67.50 to $70, furnace. There is also an active market for lower grades of bessemer ferrosilicon and sales at the recently established government prices have been made. Furnaces are reported to be unable to meet full requirements. Fifty per cent ferrosilicon is quoted from $160 to $165, Pittsburgh, for prompt, and from $157.50 to $160, Pittsburgh, for first quarter.

Scrap Under Fixed Prices

Maximum Figures Fail to Lift Market Except Where Revived Buying is Brought About—Readjustment Under Way

FOR COMPLETE SCRAP PRICES SEE PAGE 1080

Cleveland, Nov. 13.—Scrap in this territory is as yet little affected by the setting of maximum prices on the four principal grades. No considerable buying has developed and none at figures as high as the government's. The price list remains almost unchanged. Heavy melting steel is quoted at $27 to $28; at most, $2 below the government figures, and the other grades are low in proportion. The market here was one of the first to adjust itself to lowered iron and steel prices. Readjustment is taking place generally, but it will probably be at least a week before the market settles down, and then the changes are not expected to be many nor great. More buying and selling to and from points within the immediate territory is expected to result from the fixing of prices on the basis of f.o.b. consuming point. Prices heretofore have been quoted on the basis of delivered, Cleveland. Fewer rejections are reported, but embargoes make deliveries impossible at many important plants. One large interest says it has about 100 cars of scrap on track.

Mixed Results Shown

Boston, Nov. 12.—The fixing by the government of scrap prices has not been followed by much change in the local market, since values had been working down in anticipation of this cut. No. 1 wrought iron, long and horseshoes have been marked down $1 a ton and dealers have cut the price they are paying for No. 1 machinery $3 a ton, but they are paying a substantial advance over recent prices for rerolling rails and have also lifted their paying prices for wrought iron pipe. Trading is not very brisk, but at that it is better than it has been, now that the uncertainty is over. Dealers' paying prices per gross ton, f.o.b. shipping points follows: Wrought No. 1 long, $28 to $29; horse shoes, $28 to $29; cotton ties, $20 to $21; stove plate, $19 to $20; No. 1 machinery, $30 to $30.50; No. 2 machinery, $28 to $29; car axles, steel, $42 to $44; iron, $49 to $50; rerolling rails, $50; iron boiler plate, $34 to $35; bundled barrel hoops, $17.50 to $18; wrought iron pipe, $26 to $27; steel rails, $25 to $26; No. 1 railroad steel, $25 to $26; heavy melting steel, $24 to $25; axle turnings, $18 to $19; machine shop turnings, $15 to $16; cast borings, $17 to $17.50; drop forge trimmings, $21 to $22; cast iron car wheels, $30 to $32.

More Activity in East

Philadelphia, Nov. 12.—Buying of iron and steel scrap, since the establishment of government prices, has become more active. As a result prices on a number of descriptions, including heavy melting steel, steel shafting, wrought pipe, heavy cast, stove plate, No. 1 forge and bundled sheets, have advanced from 50 cents to $1 per ton. Low phosphorus has advanced $1. The only change directly resulting from government regulation is in No. 1 railroad wrought. On this grade the market here was $37.50 to $40, while the government price is $35. Wrought scrap always has brought a considerably higher price in the east than in other sections. The principal sale of heavy melting steel was 2000 tons at $27, delivered eastern Pennsylvania. Several small lots were sold to Pittsburgh dealers at $29, Pittsburgh, and resold by the latter to Pittsburgh district consumers at $30. Cast scrap is in good demand.

Fixed Grades Only Affected

Buffalo, Nov. 13.—Local prices have been reduced slightly on all the four grades the quotations for which were fixed by the government. Heavy melting steel is selling at $29 to $30, No. 1 railroad wrought at $34 to $35, machine shop turnings at $18 to $18.50, and cast iron borings at $19 to $20. The scrap situation in these grades becomes a question of the seller endeavoring to get the highest under the law, and the consumer to underbuy wherever possible. This is especially true of heavy melting steel where the government's price is higher than the previous market. No large sales of heavy melting steel has been reported at $30, but there have been transactions at $29. There has been no heavy selling in any grade though the demand is good for heavy melting steel, cast iron borings and machine shop turnings.

Chicago Market Steady

Chicago, Nov. 13.—Announcement of fixed prices on four grades of iron and steel scrap has not affected the Chicago market on old material to an appreciable degree as sufficient time has not elapsed to allow buyers and sellers to adjust themselves. As was the case generally throughout the country, quotations at Chicago are somewhat lower than the fixed price, but with an increase in demand, it is believed values will rise. It is understood some further items will be fixed, notably rerolling rails, which has considerable effect on the price of hard steel bars. The latter now are selling much above soft steel. Foundry grades have been left to the law of supply and demand, probably on the supposition that the fixed price of pig iron will control this class of scrap. Consumers are not coming into the market, although it is understood most of them need further material.

New Life is Shown

St. Louis, Nov. 10.—The recent unrest in iron and steel scrap here has been banished to a large extent by the fixing of government prices. There is a decidedly greater disposition on the part of buyers and sellers to get together and after the present period of readjustment business is expected to get back into its erstwhile swing. While prices are from $1 to $1.50 under the government's maximums, the concensus of opinion is that there will be no further recession in prices but rather that before long the maximum will become the current quotation. Consumers are quietly making inquiries for goodly tonnages of melting steel and rolling mill grades as they have been using heavily and their reserve stocks are dwindling. Relaying rails are virtually unobtainable at any price and offers as high as $70 have been made for first class stock.

Scrap Dealers Pleased

Birmingham, Ala., Nov. 13.—Southern iron and steel scrap dealers are pleased with the schedule of prices announced by the government but do not believe they will be able to command the quotations at consumers' plants. The market, however, is improving and there are a number of inquiries. No sales have been made as yet at the fixed prices. The government price of $30 per ton on No. 1 heavy melting steel, consuming point, would be equivalent in the case of Pittsburgh to about $24.50, Birmingham, while contracts made during the past week were at $22, maximum. Cast iron borings in Birmingham are listed at $11 to $12 or $16.50 to $17.50, Pittsburgh, while the government price is $20, delivered. A better feeling is noted among the dealers in the

Cutting Down Sheet Orders

Makers Carefully Scrutinize Requirements to Determine Whether They Are of Essential Character—Differentials Are Arranged

Pittsburgh, Nov. 13.—Due to the fact that there is only a limited tonnage of principal sheet products that can be safely sold, there will be no general opening of books by the American Sheet & Tin Plate Co. for 1918 business. Government demands made and to be made necessitated the adoption of this policy. It is understood allotments to domestic consumers will be made by each sales district. This plan is believed to have been determined upon last week when a meeting of district sales managers was held in Pittsburgh. It is not known what proportion of actual requirements of private buyers can be furnished by sheet makers. This can be worked out only after definite needs of the government are arranged. It is desired to furnish the general public with as much tonnage as conditions will justify where it is to be used in connection with essential undertakings. But, in line with the policy of the government, sheets to be used for so-called nonessential purposes either will not be supplied or tonnages will be greatly curtailed. The subcommittee on sheet steel has prepared differentials on sheets to conform to the prices fixed by the government on standard sizes. These differentials provide the usual relationships that are acknowledged by trade custom. They have been submitted to the general committee of the American Iron and Steel institute. Inquiries for sheets have increased.

Some Buyers Dissatisfied

Youngstown, O., Nov. 14.—All sheet mills in this territory are booked to capacity. Large volumes of inquiries for any grade of sheets continue to come in and nearly all buyers want immediate delivery. Most of the larger producers are not desirous of any new business this year. Evidently some buyers are not yet satisfied with prices for this week; inquiries were made of one producer for sheets at a lower figure than was fixed by the government. No further government allotments have been made of late in the valley although a large percentage of unfilled business on the books is for that use. Sheetmakers anticipate further business from the British and French governments since the production of sheets in those countries has been curtailed considerably on account of the increased production of shell steel.

Selling at New Prices

Cleveland, Nov. 13.—Considerable selling has followed the fixing of sheet prices and mills generally are subscribing to the government levels. It has become more apparent that certain mills booked a considerable tonnage, some of it at 5.50c, mill, for No. 28 black before the fixed prices were announced, and as a consequence their capacity now is well taken for the first quarter. A local buyer is inquiring for 540,000 pounds of No. 18 terne plate for gasoline tanks for government war trucks.

Western Makers Selling

Chicago, Nov. 13. — Government prices on steel sheets have been accepted readily by manufacturers in this district, and contracts are being made with regular customers at the new level. The leading independent in Chicago has its full complement of 17 mills operating and while it has a large tonnage for government purposes, it still has some capacity for private buyers.

Quoting New Prices

Cincinnati, Nov. 12.—The Newport Rolling Mill Co. now is quoting No. 28 black sheets at 5c, No. 28 galvanized at 6.25c and No. 10 blue annealed at 4.25c, all Pittsburgh basis and in carload lots.

Plate Sales at 3.25c Grow

Makers Now Accepting Business More Freely at Government Prices Especially in East—Some Higher Figures Still Named

Philadelphia, Nov. 12. — Eastern Pennsylvania platemakers, who during recent months have restricted their bookings to a minimum due to their expectation that government requirements would call for practically all of their output, have changed this opinion to a slight extent. Practically all eastern makers now are taking at least occasional small tonnages from regular customers for nearby at 3.25c, Pittsburgh, base. A fair amount of business was done during the week. Shipments are made dependent on government requirements. Most of the current business calls for universal plates, but some sheared and grooved plates also are moving. Some smaller eastern makers still are asking from 6c to 7.50c, Pittsburgh, but consumers are less willing to pay these prices. Additional small tonnages have been placed with eastern mills by the Emergency Fleet corporation. Awards are expected shortly on the plates for the first 25 7500-ton merchant vessels to be constructed for the government by the American International Shipbuilding Corp.

Plate Inquiries Numerous

Pittsburgh, Nov. 13.—While inquiries for plates coming from domestic users are numerous, mills are accepting only limited tonnages. Car makers are receiving plate tonnages at the government figure of 3.25c without difficulty. Heavy requirements for plates placed and being placed by the government make it appear unlikely that domestic consumers will be able to obtain adequate supplies for a long time to come.

Prices Show Range

Cleveland, Nov. 13.—Some sales of plates continue to be made by smaller mills at considerably above the fixed prices. One eastern producer is quoting sheared plates at 7.50c, mill, and a local priducer is naming from 4.50c to 6c, mill, depending on gage. Offers of universal plates at 3.33c, mill, continue to be made by an eastern producer. Local mills are receiving numerous direct and indirect government orders for plates. It is estimated recent tonnages of light plates distributed with various mills will be sufficient to make 250,000 to 300,000 buoys.

Takes Over Properties

The properties of the subsidiaries of the Midvale Steel & Ordnance Co., heretofore known as the Midvale Steel Co., the Worth Bros Co. and the Wilmington Steel Co., were taken on Nov. 3 and will hereafter be operated as units of the Midvale Steel & Ordnance Co. The Midvale Steel & Ordnance Co. maintains general offices in the Widener building Philadelphia. The status of the Cambria Steel Co. as a subsidiary of the Midvale Steel & Ordnance Co. has not been affected.

Shipbuilders Take Steel

Principal Lots of Market Supplied for New Yards on Standardized Vessel Construction—Big Orders Pending

New York, Nov. 13.—Structural requirements of the American International Shipbuilding Corp. in connection with the government shipyard at Hog island, Philadelphia, are beginning to be placed. Orders for 6000 tons of derrick towers have been distributed. The plate and angle shop, about 2500 tons, still is pending. The Stanley theater at Philadelphia, involving 2000 tons, has been revived. Deliveries on plain shapes are moving nearer. At least one eastern Pennsylvania maker now is in a position to take good sized tonnages of both standard and special sections for delivery within next two or three months. Domestic demand, however, is rather slow. Export demand for shapes, however, has shown a marked improvement. Numerous large inquiries are out, principally from Japan and France. While 3c, Pittsburgh, generally is quoted by all mills on domestic business, several leading makers are quoting 4.50c, Pittsburgh, and higher, on foreign inquiries.

Ship Steel Bids Taken

Philadelphia, Nov. 12.—Arrangements practically have been made for the fabrication of steel for the first 25 merchant vessels to be built for the government at Hog Island, Philadelphia by the American International Shipbuilding Corp. Bids on the steel have been received and tabulated and have been forwarded to Washington. The fabricated steel required is 2420 tons of plates and shapes, not including 200 to 300 tons of extras, for each vessel.. The total tonnage will be 60,500 to 67,500 tons. Later the American International company will take bids for 105 additional vessels.. The Philadelphia Electric Co. power plant has been changed to concrete and for this work 2700 tons of concrete bars will be furnished by the Bethlehem Steel Co. Shapes now are being offered more freely at the government 3c, Pittsburgh, base.

Take Ship Material

Cleveland, Nov. 13.—Some of the fabricating shops in this district are being awarded tonnages for standardized ship construction for the Emergency Fleet corporation. A Toledo plant has taken an amount estimated at 10,000 tons which will take up its capacity for six months. Considerable railroad bridge work remains in the market, notably 3000 tons for the Northwestern, which is about to be settled. Practically no sales of shapes at the 3c price are being made, except where the mills are furnishing steel for war work under government direction.

Domestic Market Quiet

Pittsburgh, Nov. 13.—Extreme quietness continues to prevail in the domestic structural market. Fabricators report that only a few inquiries from private buyers are being received. Mills are operating almost altogether on government orders. Shapes to enter into war needs are being bought at the government price of 3c, Pittsburgh, without any difficulty.

New Tonnages Small

Chicago, Nov. 13.—Although tonnages for construction work are in larger volume than was the case during October, nothing of unusual size has been placed in the west recently. The largest tonnage involves 1048 tons for manufacturing buildings at Peoria, Ill., for the Holt Mfg. Co. Fabricating shops are receiving added tonnages for ship material, which is taking up the slack in their bookings and this promises to become greater as time goes on.

CONTRACTS AWARDED

Plant for the Four Lakes Ordnance Co., Madison, Wis., 300 tons, to the Austin Co., Cleveland.

Buildings at Peoria, Ill., for the Holt Mfg. Co., 1048 tons.

Two 130 foot and one 140 foot truss spans for Morrison county, Minn., 159 tons, to the International Bridge Co., Evansville, Ind.

Deck plate girder bridge across Floyd river at Sioux City, Iowa, for the Sioux City Terminal Railway Co., 109 tons, to the Frankman Bros. Bridge & Construction Co., Minneapolis, Minn.

Extension to machine shop, Washington navy yard, 200 tons, bids being taken.

Extension to forge shop, Washington navy yard, 200 tons, bids being taken.

Derrick towers for American International Shipbuilding Corp., Hog Island, Philadelphia, 6000 tons to American Bridge Co., Downey Shipbuilding Corp. and John Eichleay & Co.

Shipways, machine shop extension, transfer shed and storage shop for New York Shipbuilding Corp., Camden, N. J., 1000 tons to American Bridge Co.

Repairs to Baltimore & Ohio railroad pier, Baltimore, 1200 tons to American Bridge Co.

Buildings for Anaconda Copper Mining Co., Butte, Mont., 3500 tons to American Bridge Company.

CONTRACTS PENDING

Machine shop for Washington navy yard, 2000 to 3000 tons. Warren, Moore & Co., Philadelphia, are the low bidders on general contract.

Stanley theater, Nineteenth and Market streets, Philadelphia, 2000 tons, bids being taken.

Tinney theater, Freeport, L. I., 200 tons, bids being taken.

Plate and angle shop for the American International Shipbuilding Corp., Hog Island, Philadelphia, 2500 tons, bids being taken.

Buildings for Langley aviation field, near Old Point Comfort, Va., 8000 to 10,000 tons; bids now being taken on approximately 3500 tons.

Buildings for Calco Chemical Co., New York, 250 tons, bids being taken.

Fencing Discounts

Arranged by Wire Makers—Inquiry Heavier But Sales Few

Pittsburgh, Nov. 13.—The market for wire is quiet. While inquiries are fairly numerous, some producers are taking new business from their regular trade only and are restricting their commitments to promptly meet government requirements. Sales to private buyers involve nails, plain wire and manufacturers' wire chiefly. The latter is being quoted at $3.45, Pittsburgh, by independents. Reductions made last week by independents are being maintained. Producers have arranged a discount of 47 per cent in carloads, Pittsburgh, on field fencing wire for dealers. The discount for 1000-rod lots is 46 per cent and for small lots it is 45 per cent. The former discount of the American Steel & Wire Co. was 51 per cent off, with independent prices higher.

Manufacturers' Wire Uncertain

Cleveland, Nov. 13.—Some question appears to have arisen among respective makers as to the proper figure for manufacturers' wire based on the government price of $3.25 for plain fence wire. It is not yet positively settled whether this will be $3.35 or $3.45, Pittsburgh, but a meeting at Chicago this week will throw light upon this point. Makers generally have adopted the figure of $3.50, Pittsburgh, per keg for wire nails. The market shows a moderate amount of new business since the government prices were announced.

Differentials Not Fixed

Chicago, Nov. 13.—Although 3.25c, Pittsburgh, for plain wire has been announced by the government, the leading interest has not yet announced its differentials on other forms of wire and wire products. Comparatively little new business is being done and at the present time the situation is uncertain. Announcement of other prices based on the plain wire figure is expected to come out shortly.

All Steel Prices Are Now Fixed

General Committee of Institute Announces Quotations and Differentials on Complete Range of Products Not Covered in Earlier Announcements

PRICES and differentials for practically all classes of iron and steel products not yet regulated have been announced by the general committee of the American Iron and Steel institute. The new prices cover a wide range of commodities and are based on the figures for the principal products announced previously by President Wilson. The institute committee has been working for weeks in conjunction with the war industries board in arriving at satisfactory price figures. The new quotations were announced by the committee as a result of the government's policy of affording the industry the opportunity of determining the prices and differentials on various products after the government itself had set the base figures.

The new prices cover the many sizes and extras on iron bars, boiler tubes, seamless tubes, and also clear up the uncertainty over warehouse quotations. For the store products, flat differentials of $20 to $25 over mill quotations, plus freight, have been fixed, according to the character of the material.

The committee's announcement means that practically the entire iron and steel industry now is operating under complete price regulation. Price fixing for iron and steel products has been voluntarily subscribed to by manufacturers and has been carried through the entire list of commodities probably more thoroughly than even the government had anticipated.

Judge Gary's Announcement

In making the announcement, Judge Gary said:

In announcing under date of Nov. 5, 1917, an agrement made by the war industries board with the principal steel industries of the United States, fixing maximum prices on certain steel articles, namely, sheets, pipe, cold rolled steel, scrap, wire and tin plate, the board, with the approval of the President, made the following statement:

"In connection with the above, the iron and steel manufacturers have agreed promptly to adjust the maximum prices of all iron and steel products other than those on which prices have been agreed upon. It is expected that this will be done promptly and consistently in line with the basic, intermediate and finished products, for which definite maximum prices have been established."

The general committee on steel and steel products of the American Iron and Steel institute has received from a subcommittee a report based on information received from representative manufacturers of various other lines of steel and steel products, and from such report and other data available, the general committee has reached a conclusion as to fair and reasonable prices for such products in line with the basic, intermediate and finished products for which definite maximum prices have been established and now recommends to the industry that the prices below stated be adopted as maximum prices, to take effect immediately, to apply to the requirements of the United States government, to the war requirements of the allies and for domestic consumption within the United States.

The committee expresses the hope that there will be no hesitancy in accepting this recommendation.

Prices

Prices announced are as follows:

Lap welded boiler tubes, 3½ to 4½ inches, at 34 off, Pittsburgh.

Charcoal tubes, 3½ to 4½ inches, 12½ off, Pittsburgh.

Seamless tubes, 1 inch, $340, Pittsburgh, per net ton.

Bar iron, $3.50, Pittsburgh, per 100 pounds.

Wire nails, $3.50, Pittsburgh, per 100-pound keg.

Painted barb wire, base per 100 pounds, Pittsburgh, $3.65. Usual trade differentials on sizes and quality to govern.

Forging steel, $60, Pittsburgh, per gross ton, with the usual extra for size and quality.

Warehouse prices for bars, shapes, billets, plates and blue annealed sheets No. 16 and heavier, $20 per ton over mill prices.

Warehouse prices on cold-rolled shets No. 18 and lighter, galvanized sheets, cold-rolled shafting, etc., $25 over mill prices.

Automobile sheets, body stock, primes, $5.95, Pittsburgh, per 100 pounds.

Automobile sheets, body stock, deep stamping, primes, $6.45, Pittsburgh, per 100 pounds.

Automobile sheets, body stock, extra deep stamping, $6.45, Pittsburgh, per 100 pounds.

Hood, flat fender, deer and apron or splash guard stock, prime, $6.05, Pittsburgh, per 100 pounds.

Crown fender, cowl and radiator casing, deep stamping, prime, $6.30, Pittsburgh, per 100 pounds.

Crown fender, cowl and radiator casing, extra deep stamping, prime, $6.55, Pittsburgh, per 100 pounds.

For automobile sheets,, seconds, prices are 10 cents per 100 pounds less than primes.

Special skelp for boiler tubes, base size, $3.40, Pittsburgh, per 100 pounds; other sizes, $3.55.

Round billets for seamless steel tubes, base size, $3.25 per 100 pounds.

Boat spikes, per 100 pounds, Pittsburgh, $5. Usual trade differentials as to sizes and quality to govern.

No. 28 electrical sheets, armature grade, $6 base Pittsburgh.

No. 28 electrical sheets, United States electric grade, $6.50 base Pittsburgh.

No. 28 electrical grade, No. 28 gage, $8 base Pittsburgh.

Electrical sheets, Apollo special grade, $8.50 base Pittsburgh.

Large rivets, $4.65 base Pittsburgh.

Additional Prices

Standard classification for extras for semifinished material. Extras to be added to base price per gross tons of rerolling billets, slabs and sheet bars.

Extras for carbon.

Up to and including 0.25 carbon base.

Twenty-six hundredths to 0.60 carbon, $1 per gross ton.

Over 0.60 carbon, $2 gross ton.

Where range of carbon is classified, extra is to be based upon the mean of such carbons.

Extras for size and cutting.

For cutting small billets, 50 cents per gross ton.

Slabs 16 inches in square area and larger, base.

On sheet bars and billets under 3⅞ inches for random lengths down to 15 feet, no extras to be charged, but regular charge of 50 cents per ton is to be made for such bars and billets cut to exact length.

Prices on extras apply only to material of standard specification; customary extras for special phosphorus, manganese, silicon, sulphur, etc., to apply.

Place Embargo

Railroads Hold Up Goods for Pacific Coast—New Rail Orders

New York, Nov. 14. (By wire.)—Railroads have placed an embargo on iron and steel shipments to the Pacific coast, about 4500 carloads of material being in store there and congestion acute. The Lackawanna Steel Co. has an order from the Italian government for 20,000 tons of rails. The Newburgh, N. Y., shipyard has a contract for four 9000-ton government vessels. The Federal Shipbuilding Corp. has a contract for ten 9400-ton government vessels. The latter firm expects to have four or five keels laid in next three weeks, although work on building the yard began only three months ago.

Large tonnages of rails are wanted for government plants, 9000 tons alone for the quartermaster's supply depot, Port Newark terminal, and a large tonnage for the Raritan river depot. Orders for additional 12,000 tons of rails for United States military use in France have been distributed.

Pig iron production is now about 3,000,000 tons short of annual requirements. The Steel corporation has commenced to ship coal from a new mine at Benham, Ky. The sheared plate capacity of the country, it is now estimated, will be increased 750,000 tons during next 12 months. The 90-inch plate mill at South Chicago starts next week.

The agreement between Japan and the United States is taken to indicate that some steel will be released for Japan shortly.

Mills Are Started

Six of the eight sheet mills of the Mahoning Valley Steel Co., Niles, O., are now in operation and the other two are completed and will be started within a short time, announces President J. D. Waddell. The company is producing black and highly finished sheets.

Coal Shortage Cripples Some Pittsburgh Mills

Pittsburgh, Nov. 14. (By wire.)—Several steel plants in this district have had to close down temporarily during the past two weeks owing to a shortage of coal. In some cases the entire works were shut down, while in others, certain departments suspended operations. The Carbon Steel Co., whose entire plant was idle for 10 days, resumed operations Monday. It now has enough coal on hand to insure operations for some time.

The transportation and fuel situation has caused the greatest concern to industrial interests in this district. All steel plants are engaged on government work of some kind or other. Suspension of work at the Carbon plant is said to have resulted in a loss at the rate of $400,000 a month on orders. The company operates its own coal mines, but has been unable to get adequate coal requirements to its plant owing to a lack of cars.

Heavy Loss

Shown in Steel Corporation Unfilled Orders—Represents Sixth Drop

For the sixth successive month, bookings by the United States Steel Corp. showed a shrinkage during October. Unfilled orders on Oct. 31 amounted to 9,009,675 tons, a decrease of 823,802 tons, or 8.37 tons compared with Sept. 30. The Steel Corporation since April 30 has followed a steady policy of restricting all excepting government business so as to be able to concentrate on the latter. The total shrinkage has been 3,173,408 tons since April 30, when record unfilled bookings of 12,183,083 tons were attained. Comparisons follow:

Date.	Total.	Change, tonnage.	Change, per cent.
Oct. 31, 1917..	9,009,675	823,802—	8.37—
Sept. 30, 1917..	9,833,477	573,572—	5.51—
Aug. 31, 1917..	10,407,049	433.115—	4.16—
July 31, 1917..	10,844,164	539,123—	4.74—
June 30, 1917..	11,383,287	503,304—	4.24—
May 31, 1917..	11,886,591	296,492—	2.43—
Apr. 30, 1917..	12,183,083	471,439+	4.02+
Mar. 31, 1917..	11,711,644	134,947+	1.16+
Feb. 28, 1917..	11,576,697	102,643+	0.90+
Jan. 31, 1917..	11,474,054	73,232—	0.64—
Dec. 31, 1916..	11,547,286	488,744+	4.43+
Nov. 30, 1916..	11,058,542	1,043,282+	10.41+
Oct. 31, 1916..	10,015,260	492,676+	5.18+
Sep. 30, 1916..	9,522,584	137.133—	1.42—
Aug. 31, 1916..	9,660,357	66,765+	.69+
July 31, 1916..	9,593,592	46,866—	0.48—
June 30, 1916..	9,640,458	297,340—	3.09—
May 31, 1916..	9,937,798	108,247+	1.11+
Apr. 30, 1916..	9,829,551	498,550+	5.34+

Establishes Warehouse

Miner-Morse Corp., Erie, Pa., have contracted for a modern steel warehouse and ground will be broken in the next week or 10 days. The building will be constructed of steel with brick sidewalls, and will be 100 feet long, 60 feet wide and have 21-foot headroom. Modern appliances with which it will be equipped, such as electric cranes, up-to-date racks, wall stands, and floor stands, will allow the carrying of upwards of 2000 tons of steel bars and sheets in stock. The corporation expects to carry a complete line of shafting; screw stock; cold drawn and hot rolled alloy steels; steel bars; refined iron bars; carbon, and high-speed tool steels.

Ingot Output

Gains in October—1917 Production Set at 42,600,000 Tons

Steel ingot production was heavier in October than in any of the immediately preceding months. The American Iron and Steel institute has received production reports from 29 companies which turned out 3,351,935 gross tons in October; 2,972,259 tons in September; 3,123,217 tons in August and 2,939,115 tons in July. These same companies in 1916 produced 88.14 per cent of the country's total output.

Up to Nov. 1, these companies have produced 31,287,346 tons, giving a monthly average below the actual October production. The total production includes 22,756,285 tons of open-hearth ingots; 8,445,741 tons of bessemer ingots and 85,320 tons of other classes. In October, the open-hearth production was 2,475,754 tons, bessemer 870,494 tons, and other classes 5687 tons.

The institute estimates the country's total ingot output in 1917 will reach 42,600,000 tons.

War Board

Centralizes Authority by Naming Replogle as Steel Director

Washington, Nov. 13.—In the appointment of J. Leonard Replogle as director of steel supply, announcement of which was carried in THE IRON TRADE REVIEW last week, is seen reorganization of the raw materials division of the war industries board under direction of B. M. Baruch. This is not a "shake-up"; it is more of centralization of authority.

As Mr. Replogle, who had been advising Mr. Baruch in matters of steel, had been really directing steel requirements of the government and the allies, it is presumed under the reorganization that Eugene Meyer, in charge of nonferrous metals, will be made director of mines and minerals; L. L. Summers, director of chemicals and explosives; R. H. Downman, director of lumber, and Joseph Guffie, director of oil.

At Mr. Baruch's office it was said the reorganization is in progress, but official announcement is awaiting details. The directors in their new positions will have no more authority than that already in effect, but will become recognized heads of departments through which definite negotiations may be made.

No word has yet been passed as to who will succeed Frank A. Scott as chairman of the war industries board.

Want Contracts Revised

Buyers of Semifinished Press Makers to Bill at Fixed Prices —Heavy Inquiry for Sheet Bars

Pittsburgh, Nov. 13.—Now that finished steel levels have been generally fixed buyers with old semifinished steel contracts at prices considerably above the government levels are bringing pressure upon the mills to rewrite these in accordance with the latter schedule. The producers of semifinished metal are strongly opposing this movement toward making the government prices retroactive. Only limited tonnages of billets and sheet bars are being sold. Mills are unable to take care of the inquiries which are out, where anything like early delivery is requested. One sale of 500 tons of sheet bars during the past week was made by a producer in a nearby district at the government price of $51, Pittsburgh. It is unlikely that there will be a heavy movement of either billets or sheet bars at the government prices until after pending contracts are filled.

Slabs Sell at $50

Philadelphia, Nov. 12.—The only sale of semifinished steel reported as having been made in this district since the application of price regulation, is of approximately 2000 tons of slabs, which have been sold by an eastern Pennsylvania mill to an eastern consumer on the basis of $50, Pittsburgh.

Many Want Sheet Bars

Cleveland, Nov. 13.—Numerous inquiries for sheet bars for the first quarter are in the market from consumers in different districts and the aggregate tonnage runs to many thousand tons. Some buyers are seeking to cover for the first half. Where makers are contracting to supply forward sheet bars to finishing mills at $51, Pittsburgh or Youngstown, they are doing so with the provision that shipments are subject to government needs of semifinished steel. The mills are receiving large orders from the government for shell steel to be shipped to munition makers, or for slabs to be furnished mills rolling ship plates. The week's bookings of one maker of this character exceeded 25,000 tons. Some small sales of sheet bars at $51 have been made by direction of the navy department to mills rolling material for the latter. Producers have shown little interest in an inquiry for 8000 to 10,000 tons of slabs recently put out by a Massillon consumer. Forging billet prices still are an open market proposition, with some makers quoting 4.75c, mill, per pound. A small lot was placed this week for gun mounts.

Heavy Orders

For Locomotives for Russia are Near —Establish Repair Plants Abroad

New York, Nov. 13.—In order to provide proper facilities for maintaining and repairing railroad equipment in Russia, 150 picked employes of the American Locomotive Co. and the Baldwin Locomotive Works have left for Russia via Seattle. Organization of thes men already has been perfected and they will begin work at once upon their arrival in Russia on the establishment of a locomotive shop. The present intention is to let orders for 1500 to 2000 locomotives for Russia within the next few days. The order will be divided between the Baldwin and the American companies.

The American International Shipbuilding Corp., which recently placed an order for 2000 tons of rails for its government shipbuilding plant at Hog Island, Philadelphia, has placed an additional 4000 tons. All of these rails are to be furnished by the Bethlehem Steel Co. Numerous small tonnages of rails have been sold to industrial companies in the east during the past week at $80 to $85, mill.

Trade to Adjust Rails

Pittsburgh, Nov. 13.—Any readjustment that may be made in rails and track equipment will be brought about by trade conditions. In view of the fact that it is impossible to place orders for rails for sizable tonnages and before 1919, a price adjustment would be largely nominal. Only light tonnages of spikes are being sold. The quotation on ⅜, 7/16 and ½-inch spikes is 7c, while 8c to 8.50c represent levels named on 5/16-inch spikes.. Track bolts are quoted at 6.50c to 8.50c, Pittsburgh, and the prices on light rails, 25 to 45 pounds, range from $75 to $85 a ton.

Government Buys Cars

Chicago, Nov. 13.—The new United States government order for cars, announced a week ago, it now is announced calls for 4975 freight cars for use on its railroad in France. This includes all types of cars, which were distributed in lots ranging from 125 to 500 with various makers. The Western Pacific railroad has ordered 1500 box cars from the Mt. Vernon Car Mfg. Co. and 400 general service cars from the Western Steel Car & Foundry Co.

An eastern railmaker has recently sold some tonnages of 67½-pound rails, originally rolled for Russian use, at $60 per ton. Some small lots of standard sections have been sold recently for immediate delivery by the same interest at $75 to $80 per ton. Light rails are being sold by the western maker at $70 to $75 per ton, and sales for delivery within six months are about equal to output.

Pipe Advanced

In West $5 Because Former Cut Proved Too Severe

Chicago, Nov. 13.—An advance of $5 per ton has been made on cast iron pipe, bringing 4-inch to $58.50, Chicago, and 6-inch and larger to $55.50, Chicago. This brings the Chicago market more into line with the east, which has been on a higher level for several weeks. The recent cut of $15 per ton, when the fixed price was announced on pig iron, apparently was too great. Wellsville, O., will open bids on Nov. 19 on 370 tons of 12-inch or 500 tons of 16-inch. It is understood that figures will be asked on wood, steel and cast iron. Kansas City, Mo., has awarded 600 tons to the United States Cast Iron Pipe & Foundry Co. Kansas City, Kans., has awarded 250 tons to the Arkansas Bridge Co., which is not known to have placed the business with a maker.

Take Bids for France

New York, Nov. 13.—Bids were opened at Washington last Saturday on 2750 tons of various classifications and size of cast iron pipe for United States military use in France. So far, no awards have been made. Private buying has shown some improvement, but still is far from active. No municipal lettings are in sight. Prices continue unchanged at $56.50, New York, for 6-inch, Class B, and $59.50, New York, for 4-inch, Class B.

Mills Heavily Booked

Pittsburgh, Nov. 13.—Makers of pipe are heavily booked and except in certain grades are unable to accept early business. Inquiries for steel pipe are fairly numerous. Limited tonnages of iron pipe are being sold, lap-welded grades being particularly in demand. Producers, as a general thing, are

unable to book sizable tonnages for shipment before next March or later. The trade has become adjusted to the new prices fixed by the government, the discount for standard steel pipe being established at 52 and 5 and 2½ per cent, Pittsburgh, as a result of which makers have issued a new card calling for a discount of 51 per cent off, in accordance with trade custom. The new card of makers of wrought iron pipe leaves prices unchanged, the discount being 33 per cent off on black and 17 per cent off on galvanized pipe.

Little Effect

On Tin Plate by Government Price—1918 Books Still Closed

Pittsburgh, Nov. 13.—Fixing by the government of a price of $7.75, base, per box, Pittsburgh, on tin plate has had no effect on the market by way of increasing inquiries. Producers continue to withhold opening of books for 1918 business and will not do so until they learn their allotments from the government. The government tonnage continues large and will demand heavy production next year in connection with the food conservation program. It is probable, however, that private buyers will be able to receive fairly liberal supplies. Manufacturers are well committed for the remainder of the year and the small tonnages they are selling are being taken from stocks principally.

Heavy Orders Expected

Youngstown, O., Nov. 14.—Tremendous tonnages of tin plate are expected to be placed by the government among the various mills. Valley makers expect to participate in the distribution. Heavy inquiries, which aggregate nearly 1,000,000 base boxes of various gages, already are in the hands of makers. The entire order will be forwarded to England and France, where it will be used for canning purposes. The price of $7.75 per 100-pound box, Pittsburgh, was quoted.

Will Handle Embargoes

All applications for permits to make shipments through the embargoes that may be in force from time to time between the lines of the New York, New Haven and Hartford Railroad Co., and the Pennsylvania Railroad Co., hereafter are to be made to a joint committee which has been established with headquarters in New Haven.

Fix Price on Foundry Coke

Fuel Administration Sets Figure $1 Above Furnace Grades—Closer Regulation of Coke Industry May Be Enforced

WASHINGTON, Nov. 13.—Stricter regulation of the coke industry may be expected from the fuel administration under the powers granted in the food control bill. Establishment of maximum prices on two additional grades of coke last week and two conferences with coke men early this week indicate the producers are to be brought up with a sharp turn. Nothing definite is to be had in regard to $5 coke but the belief strongly prevails that the reduction in price will soon be made.

The prices announced last week were:

Blast furnace coke (fixed Sept. 24)	$6.00
Foundry coke, 72-hours selected.	7.00
Crushed coke, over 1-inch size..	7.30

These prices apply to coke f.o.b. ovens in car lots on a per ton basis of 2000 pounds and are effective on all coke made in ovens, without by-product recovery, east of the Mississippi river. Any commissions or margins allowed are to be paid by the seller and not affixed to the prices established. As to coke made in other districts, the fuel administration says: "The maximum prices for various grades of beehive coke * * * shall bear the same ratio to the established price of the coal from which the coke is made as the average contract prices of the same grades of coke had to the average contract prices of coal during the years 1912 and 1913."

Prices Open to Revision

The extras announced are effective immediately and are subject to revision after Warren S. Blauvelt, coke director of the administration, and his staff have had opportunity to investigate conditions in the industry. This may mean Jan. 1 or it may mean sooner.

"The extra dollar on foundry coke and the extra $1.30 on crushed coke are fixed merely to clear up the points involved and to enable producers to do business," Director Blauvelt said. "They are bonafide prices of course and will be in force and effective until revised.

"But we do not say the maximum prices will be satisfactory everywhere. There will be some producers who cannot make coke except at a loss at those prices, but the producers are urged to go ahead and make all they can and be assured individual cases will be adjusted according to merit. We will allow cost, probably will allow a price based on cost plus a fixed sum in such cases."

The fuel administration is now giving attention to the needs of steel mills for both coal and coke. The administration is working in conjunction with the railroads' war board in the matter of transportation and is expected to materially relieve the shortage of fuel at these plants.

A meeting was held with by-product coke producers yesterday and one is being held today with gas coke men. Regulations will be promulgated later in the week reflecting some of the questions taken up at these meetings. The regulations will be general but will provide for relief where their application may appear unjust.

Base By-product on Freight

Prices on by-product coke are to be that in the nearest competing beehive district plus the freight differential between that district and the by-product plant. This is the result of a meeting of operators with fuel administration and needs only Fuel Director Garfield's official approval.

Scrap Dictator is Wanted by the Dealers

Washington, Nov. 13.—Scrap dealers are back of propaganda being circulated in efforts to obtain a national scrap administration similar to the food and fuel administrations. Secretary Redfield's efforts in the conservation of scrap are cited as an argument for this proposed bureau. Scrap iron and steel have been handled through the war industries board and the scrap committee of the American Iron and Steel institute. Nothing outside of the usual channels of any national importance has been done for the general conservation of scrap, but the present movement is to coordinate the conservation of all kinds of junk, the annual amount of business in this trade being, it is said, more than $1,500,000,000. Whether this proposed bureau would take the matter of iron and steel scrap out of the hands of the war board is not known, but the belief that as far as the iron and steel industry is concerned it would not.

Founders Convene

Association Opens Annual Convention Today in New York City

New York, Nov. 14. (By wire.)—The twenty-first annual convention of the National Founders' association was opened this morning at the Hotel Astor. Following the report of officers, George F. Monaghan, general counsel for the association, made an interesting address on "Federal Control and Industrial Legislation". A. F. Corbin, chairman of the committee, also gave an interesting discussion on "Safety and Sanitation". This evening the annual banquet will be held.

The schedule for this afternoon is made up of the following program: "Government Contracts Under 8-Hour Labor", W. H. Van Dervoort, president of the National Metal Trades association; "A National Test", Albert Green Duncan, past president of the National Association of Cotton Manufacturers; "The Present Conditions of the Railways", L. F. Loree, president of the Delaware & Hudson railroad; and "The National Industrial Conference Board", Magnus W. Alexander, executive secretary.

Tomorrow morning William A. Taylor, Indianapolis, will talk on "The Winona Foundry School", and J. J. Wilson, chairman, will make a report of the committee on foundry methods. Motion pictures of labor-saving appliances in the foundry, will be presented under the direction of the committee on foundry methods. Following committee reports, election of officers will be held.

Huge Total

Represented by War Orders at Detroit—Coal and Steel Needed

Detroit, Nov. 12.—In spite of an unabated shortage of industrial coal and inability to obtain prompt delivery of metal Detroit rapidly is attaining front rank in the manufacture of war materials. It has been estimated by competent financial authorities that war orders approximating $500,000,000 are being worked upon or are about to be contracted for before the end of the year. This distribution of government work extends to practically all the large plants, especially those engaged in the motor industry, in which conditions are unusually suitable for munition work.

Only these war orders, requiring but few plant changes, have enabled many plants to retain their full working forces as with the restrictions placed on the motor car and allied industries by the war, a problem had to be met to keep the wheels turning. The war business in many instances has solved the difficulty. Governor Sleeper offers a ray of hope for industries here by his assurance that increased coal shipments will begin coming to Michigan by Dec. 1, by government order. It is believed that construction work will be resumed on a large scale next spring. All that is holding it back now is the inability to obtain steel.

Included in the $700,000 being spent by the Detroit, Toledo & Ironton railroad will be the purchase of new rolling stock and construction of new yards in Detroit.

Distribution of the goods of the Foster Machine Co., the Quickwork Co. and the Gisholt Machine Co., has been taken over, in Detroit territory, by the Charles A. Strelinger Co., dealers in machinery, tools and supplies.

Brunner Mond Co., a subsidiary of the Solvay Process Co., has started work on an alkali plant in Amherstburg, Ont., across the river from its Detroit plant. The new industry will represent an investment of $8,000,000.

The Standard Screw Products Co. has purchased two 2-story buildings at 621 Bellevue avenue, formerly occupied by the P. R. Mfg. Co., to replace its buildings recently destroyed by fire. The company, of which E. E. Keller is president, and F. P. Reinhart, secretary, proposes new additions and alterations which will give an increase of 50 per cent in production.

The subsidiary companies of the United States Steel Corp., according to a statement by Chairman Elbert H. Gary, will subscribe an aggregate of $500,000 to the new $35,000,000 war fund of the Young Men's Christian Association.

The Non-Ferrous Metals

Copper Lead Spelter Tin

New York, Nov. 13.—Interest in the metal markets has shifted to spelter the past few days, due to preparations on the part of the government and producers to settle upon some method by which the government will cover its spelter requirements at a fair price and still give producers a chance to exist. A meeting was held by producers in Eugene V. Meyer Jr.'s office in this city Monday, at which a committee was appointed to represent the industry. This committee met later to draw up recommendations which it will make to the war industries board. Demand for spelter has been inactive for months, and prices have fallen below the costs of production of most companies. Prices for 60 per cent zinc ore range from $65 to $75 a ton, and at this level smelters are losing on the average of $1 to $2 a ton on the spelter they produce. The disadvantage in this from the government standpoint is the fact that shutting down of plants and consequent breaking up of organizations might constitute an unfavorable situation at a later date, when the government munition requirements have reached larger volume. Inquiry from consumers for commercial purposes has improved the past week, with consequent firming of prices, prime western now being quoted as follows: Prompt, November and December shipment, 7.87½c to 8c, St. Louis; first quarter of next year, 8.12½c to 8.25c.

The tin shortage continues acute, but sentiment is more cheerful among consumers as the result of a letter sent out by John Hughes, assistant to the president of the United States Steel Corp., and chairman of the tin subcommittee, to the trade. In this notice Mr. Hughes said: "Members of the tin subcommittee have been in Washington the past week and the situation has been strongly presented to the war trade board. The co-operation of the war industries board and the United States food administration has been secured. The Washington authorities are fully acquainted with the facts and the war trade board, which has control over all imports under a recent proclamation of the President, has taken steps to afford relief, definite announcement of which will be made shortly." Occasional sales of 5-ton and 10-ton lots of spot Straits tin are being made to consumers at prices of 71c to 73.50c. Dealers and jobbers are unable to obtain the metal however. Spot Chinese No. 1 is quoted 71c.

The copper market has shown few developments the past week. The copper producers committee, 60 Broadway, has been busy in arranging deliveries for November on the old high priced contracts and the prospects are these deliveries will run well into December, owing to the heavy war requirements, details of which are not published. Several contracts for January delivery have been made by producers at the 23.50c price, with the provision that delivery should be made in December if sufficient metal is available. Spot lots of copper are held at 26.50c by second hands, but little trading in these lots is reported.

The outside lead market has eased off since the last advance announced by the American Smelting & Refining Co., to 6.25c, New York. Consumers have been showing less interest in the market, following a period of much activity. The outside lead market now is quoted about as follows: Prompt, November and December, 6.25c to 6.37½c, St. Louis.

Aluminum prices are weak and demand is inactive. The market has contained little of interest in several weeks, although there has been a report the government would fix one price to all on virgin ingot, to replace the price of 27.50c at which the leading interest has been selling the government. The leading interest's contract price continues 37c for 1917 and 1918. In the open market, No. 1 virgin ingot is quoted 36c to 37c; No. 1 remelted, 35c to 36c; and No. 12 alloy, 27c to 28c.

Pioneer Ore Firm Adds Steel Mills to Its Large Furnace and Iron Mine Holdings

New Cleveland Plant of Corrigan, McKinney & Co., Including Coke Ovens, Blast Furnaces, Open-Hearths, and Rolling Mills, Now in Operation—Coke-Oven Gas and Tar Used in Open-Hearth Furnaces

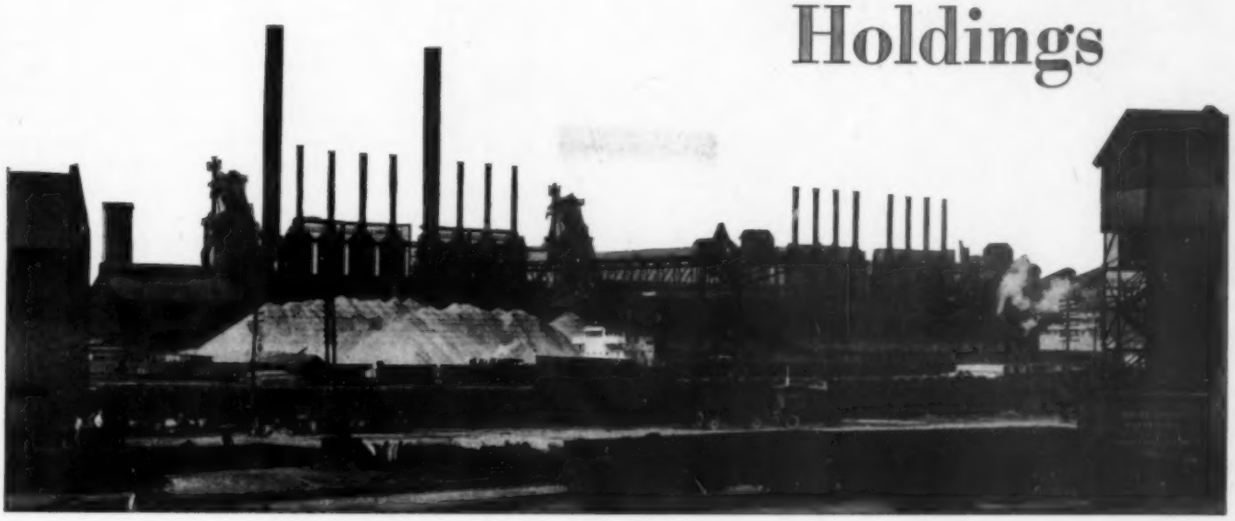

Fig. 1—Blast Furnaces, Docks, Ore Bridge and Unloaders of the River Furnace Co., Cleveland.

THE quiet confidence with which the American people view the outcome of the war rests largely upon their knowledge of the superior resources of this country when contrasted with those of Germany and all her allies. The general public recalls vaguely what steel manufacturers know specifically, that is, that the United States and her allies can produce 57 tons of steel to only 32 tons for the enemy; 55 tons of pig iron to 21 tons.

After nearly three years of armed neutrality, the United States had learned only imperfectly the great lesson of modern warfare that success is largely a question of steel. Six months of active participation in the war has taught the full meaning of that lesson. The government will need in the next 60 days as much steel as the Germanic alliance can produce in 85 days.

The country's ability to meet this sudden surge of federal orders inspires confidence. That the steel industry has this war-winning capacity available is due largely to the courage with which its early leaders expanded their plants to meet future needs. As these needs grew, new steelmasters stepped to the foreground and added more capacity. In the past few years, high costs and delayed deliveries have not prevented the enlargement of existing steel plants and the creation of new ones. The assurance of immediate profits and the confidence in future ones, proved the spurs that have added about 10,000,000 tons—or more than 25 per cent—to the country's steelmaking capacity since the European war begun.

Few concerns illustrate so clearly this tendency of the American steel industry to prepare for the future as Corrigan, McKinney & Co., Cleveland. This firm's inception dates from the early eighties when James Corrigan, after a successful career in the oil business, began to gather together a fleet of lake vessels to carry iron ore. The next step was ore mining, then followed pig iron manufacture, until today the firm has one of the most modern steel plants in the world—a plant that can turn out 500,000 tons of semifinished and finished steel products for either peaceful or warlike purposes.

Mr. Corrigan, after building up a fleet of ore carriers, formed a partnership to engage in the ore mining and selling business, under the name of Dalliba, Corrigan & Co. During the panic of 1893, the firm, which had been reorganized as Corrigan, Ives & Co., failed and Price McKinney was appointed receiver. During the 24 years which have elapsed since that time, Mr. McKinney has been a dominant factor in the firm, serving since Mr. Corrigan's death in 1908 as president. He brought the firm successfully out of the receivership and participated in its reorganization as Corrigan, McKinney & Co. The firm now comprises Mr. McKinney, James W. Corrigan, and Ella M. Burke, the widow of the late Judge Stevenson Burke, one of the early partners.

The firm early reached a prominent position in the ore trade and until a few years ago was the largest independent seller of Lake Superior iron ore. The company controls a large number of mines on the Menominee range, the Star West on the Marquette, and the Colby and Ironton on the Gogebic. It was one of the first to grasp the importance of the Mesabi discoveries, and on that range operated at different times the Admiral, Commodore, Stevenson, St. James, Jordan and St. Paul mines. The Stevenson for years was one of the Mesabi's greatest producers.

The firm's first venture into the pig iron producing business was its lease of the furnace of the Upson Nut Co. The latter firm reassumed control of the property at the expiration of the lease, and Corrigan, McKinney & Co. promptly

FIG. 2—REAR VIEW OF COKE OVENS SHOWING QUENCHING HOUSE, CRUSHER HOUSE, DISTRIBUTING ARMS AND OVEN STORAGE BINS

purchased land farther up the Cuyahoga river and in 1909 began the construction of its first Cleveland stack. A second, also of 350-ton capacity, was started immediately afterward. Two 500-ton modern stacks were begun in 1915 and finished in 1916. Before building its first Cleveland furnaces, the company had secured the 300-ton Genesee stack at Charlotte, N. Y., and had built the two 350-ton Josephine furnaces at Josephine, Pa. It also had leased the 300-ton Scottdale, Pa., furnace. The eight furnaces have an annual pig iron producing capacity of about 1,000,000 tons. The firm has since figured less prominently as an ore selling agency, in order to conserve its reserves for its own requirements. Limestone quarries at Williamsburg, Pa., and Gouverneur, N. Y., were purchased.

In 1913, the company began work on the big steel plant at Cleveland which had been decided upon several years earlier. This plant is located at Cleveland, just across the river from the company's four blast furnaces. It includes 12 open-hearth furnaces, 204 by-product coke ovens, a 40-inch blooming mill and 18-inch and 21-inch bar mills. The open-hearth department includes twelve 80-ton stationary furnaces. The steel mill is prepared to furnish blooms from 18 x 36 inches to 4 x 4 inches; slabs, from 12 x 2 inches to 24 x 8 inches; squares, 1⅛ inches up to 6 inches wide; rounds, from 3 to 5 inches; and tin mill plate from 5/32 x 8 inches to 1⅛ x 12 inches.

Because of the advantageous location of the furnaces on the Cuyahoga river and the Ohio State canal, the ore can be brought direct to the stockpile in freighters, entirely eliminating the use of railroad cars. The ore and limestone delivered to the docks by water, is unloaded by three Hulett machines and deposited in the stockpile by two large ore bridges. Ore for the furnaces is taken from the stockpile by one of the bridges and is discharged into one of the two electrically driven transfer cars on the double tracks of the ore trestle. The trestle differs from those of many furnace plants in that it has approaches at either end.

The trestle bins are of steel construction, and the hopper of each bin is equipped with eight lever-type doors which discharge the ore into electrically operated scale cars below. Three of these cars serve the 30 trestle bins containing stock for Nos. 3 and 4 furnaces, two of the cars transferring the material to the skip pits while the third is held in reserve.

The first of the River furnaces, Nos. 1 and 2, were blown in May 28, 1910, and June 20, 1912, respectively. Each stack is 80 feet x 20 feet, 3 inches, and has a rated capacity of 300 tons per day. The bosh of No. 1 furnace is held together by 1¼-inch x 6-inch steel bands and contains eight tuyeres. The bosh of No. 2 furnace is similarly held

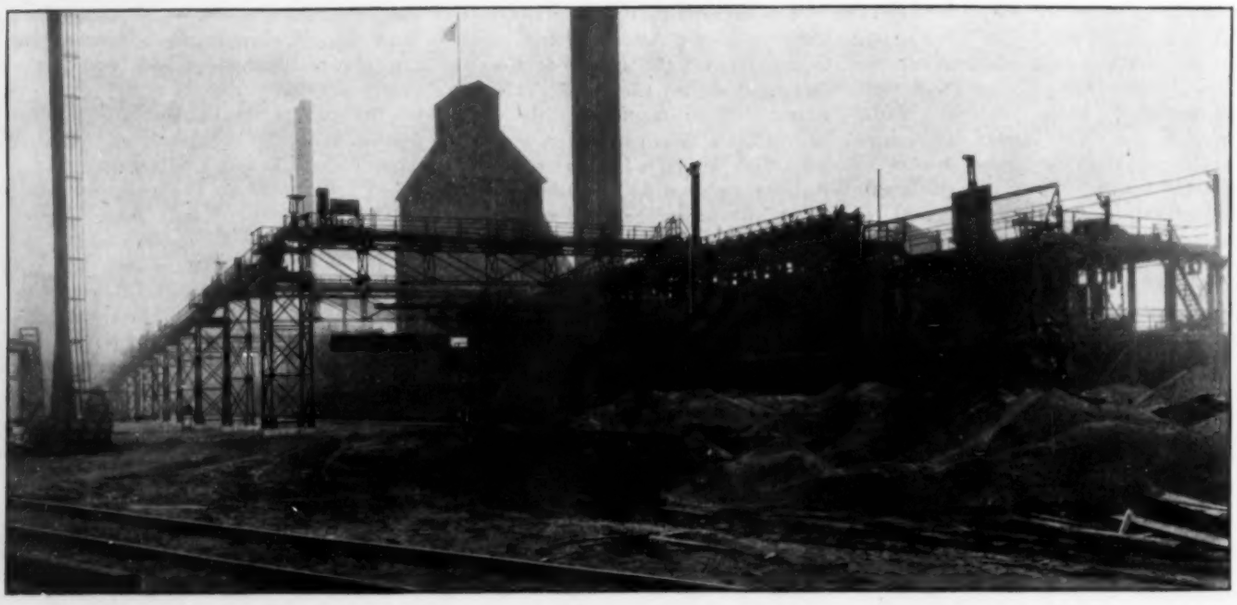

FIG. 3—COKE PUSHER, GAS MAINS AND BLEEDER ON THE PUSHER SIDE OF OVENS

by bands and contains 10 tuyeres and 10 rows of wedged shaped plates. The hearth of each furnace is encircled by a 1-inch cast steel jacket and is cooled by water circulated in pipes imbedded in the brick work and coupled in series. The cooling devices used in both furnaces are supplied with water from the usual type of manifold installed near the top of the bosh. Each manifold is fed by a 10-inch low pressure or a 6-inch high pressure line.

The company has developed a unique method of slag disposal. Cinder ladles are used at all four furnaces and in addition to this equipment No. 1 furnace is equipped with a granulating pit and monorail hoist to be used in case the ladles are not available. The slag from the blast furnaces is hauled to a dump located near the coke ovens where it is poured and allowed to cool. The cold slag is then loaded into cars and delivered to a slag crusher, hoisted in a skip to the top of the building and then emptied into a vertical cone-shaped crusher. The metallic iron contained in the slag is removed by a magnet suspended over the mouth of the crusher. The broken slag is then set into a revolving conical screen which distributes the material into cars below in sizes classified as ¾-inch, 1½-inch, tailings and sand. The crushing machinery in this department is driven by a 230-volt, 75-horsepower motor which operates at 850 revolutions per minute.

Two other furnaces, each 90 x 22 feet, with a stockline of 16 feet and a rated capacity of 500 tons per day, were completed during the year 1916. These furnaces, known as Nos. 3 and 4, were blown in May 13, 1916, and Dec. 30, 1916, respectively. The bosh of each

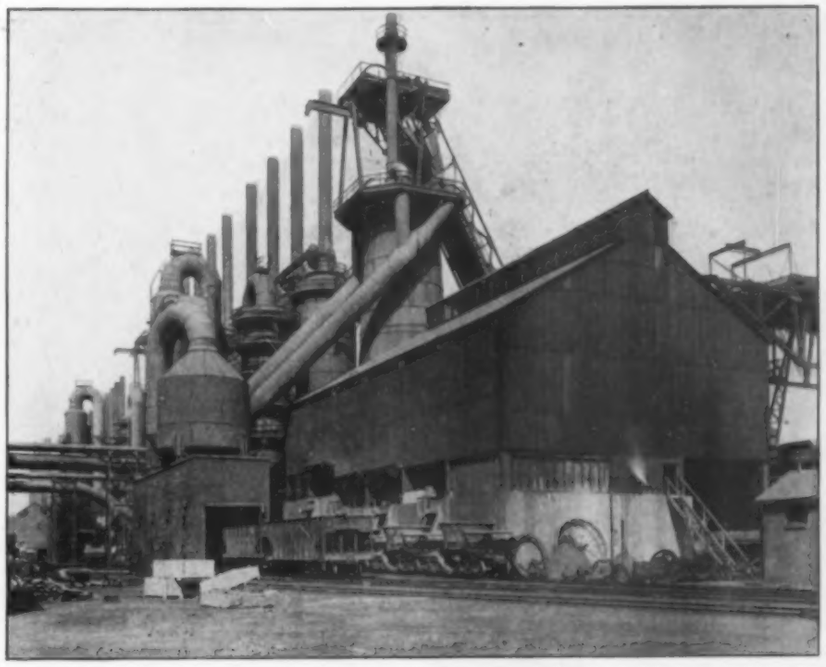

FIG. 5—SOUTH END OF BLAST FURNACE DEPARTMENT, SHOWING TOP ARRANGEMENT, DOWNCOMERS AND DUST CATCHER HOUSE

of these furnaces is encircled by a cast steel tuyere jacket and eight 1¼ x 12-inch steel bands. The bosh is cooled by 12 tuyere coolers and nine rows of cooling plates. The 12 tuyeres are fed and discharged at the side to accommodate cast iron guard plates which rest on the lower surface of the cooler to protect it from being damaged in case molten iron penetrates the blow pipe. The hearth is cooled by cast iron water-blocks inserted between the brick and hearth jacket. These blocks are fed by 1¼-inch pipe and discharged into an overhead trough equipped with two 12-inch outlets. Under ordinary conditions the upper manifold is fed by a 12-inch low pressure line, equipped with a 3-basket horizontal screen. A 6-inch high pressure line is connected to the manifold for emergency use. The upper manifold feeds an 8-inch secondary manifold which encircles and extends out from the bosh just above the tuyeres.

Each furnace is filled by two skips running alternately up a bottom-covered skipway of the cantilever type. The skips have a capacity of 3400 pounds of coke each and are operated by a

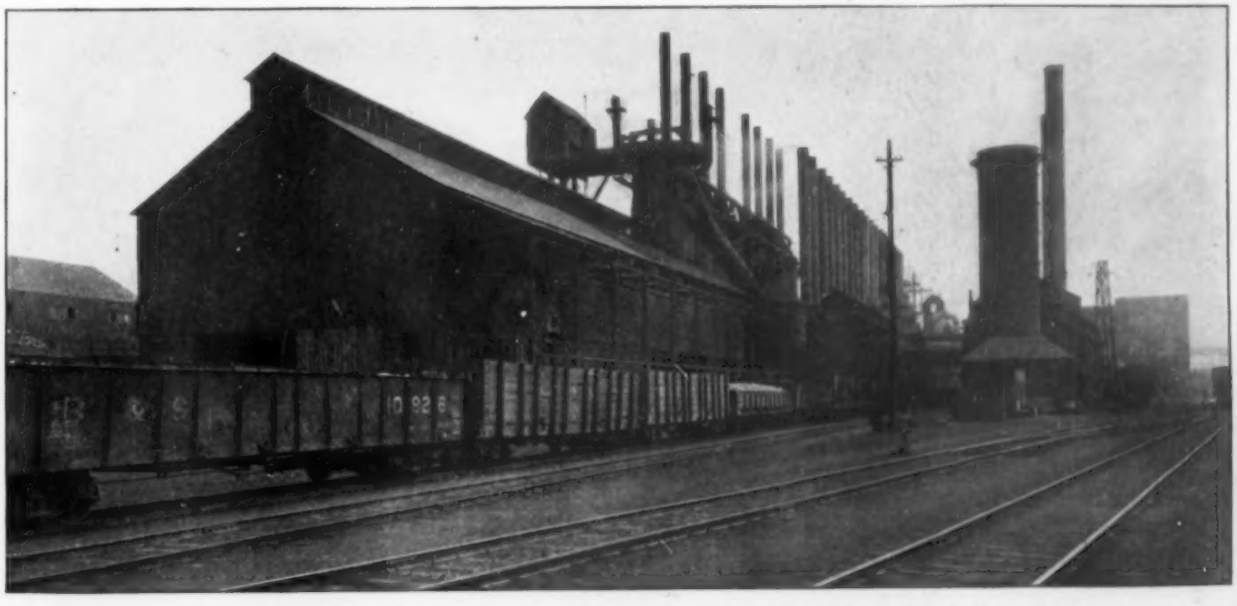

FIG. 4—NORTH END OF BLAST FURNACE DEPARTMENT SHOWING MONORAIL SLAG CRANE

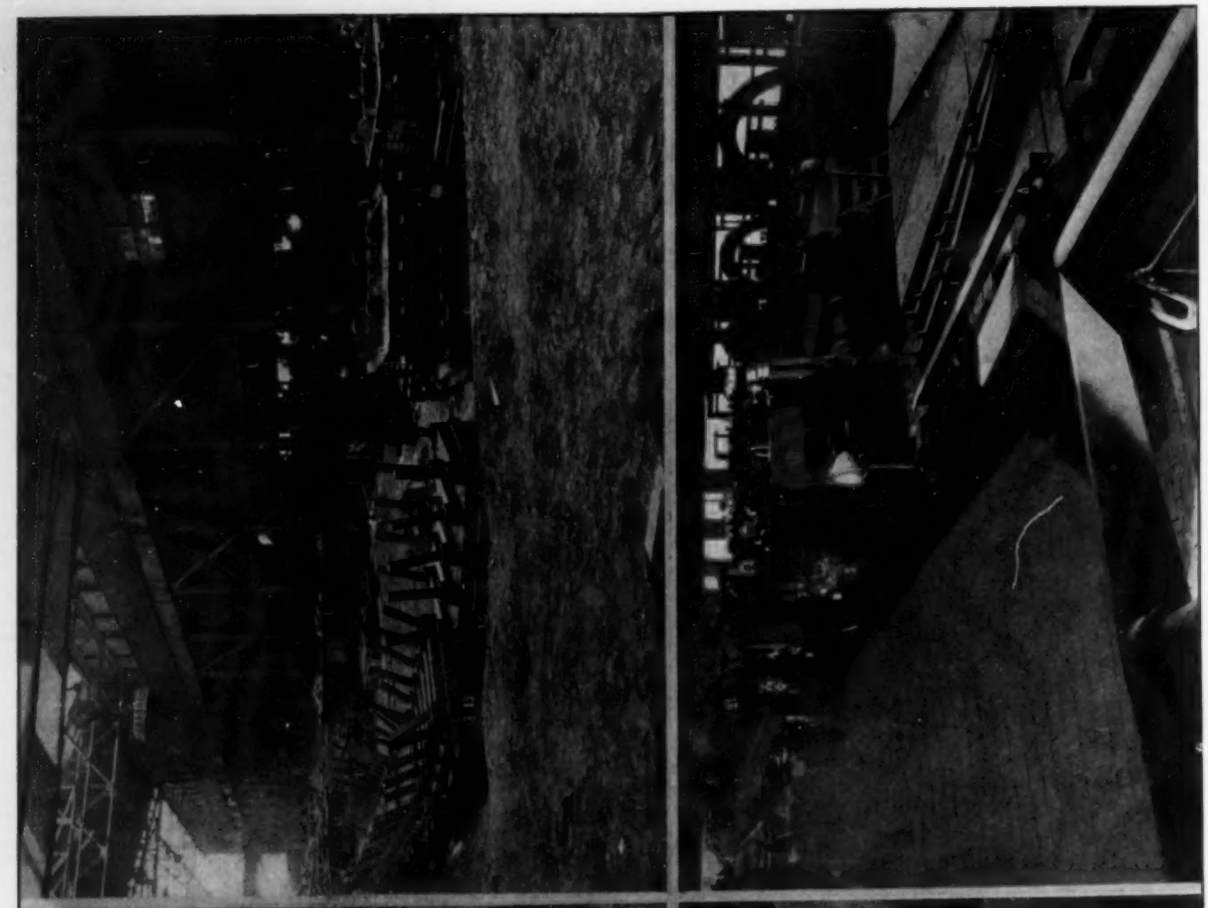

FIG. 8—BILLET AND BLOOM DISPOSAL CARRIAGES
FIG. 9—FOUR STAND 21-INCH MILL

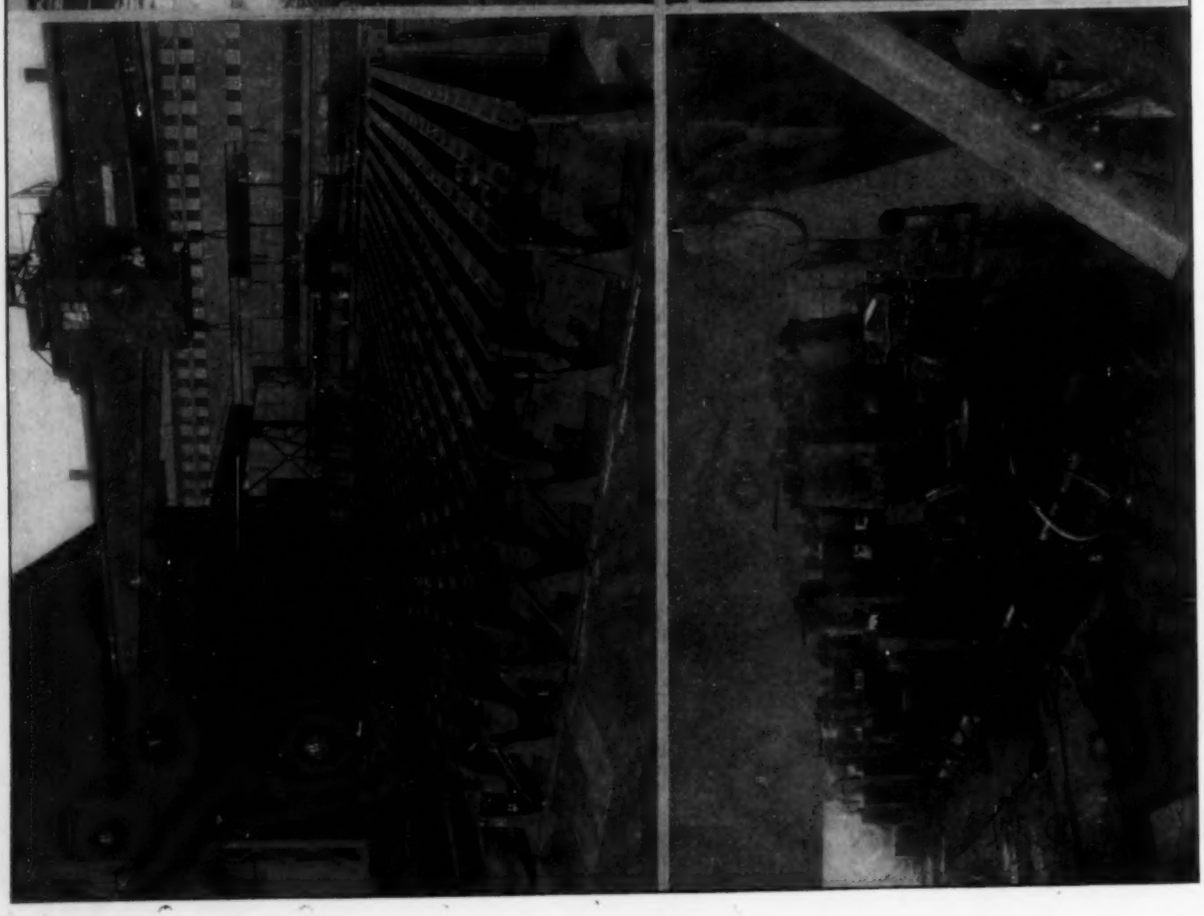

FIG. 6—MORGAN SCRAPER BED AND SCALE POCKETS
FIG. 7—SIX STAND 18-INCH MILL

FIG. 10—CHARGING SIDE OF THE 80-TON OPEN-HEARTH FURNACES SHOWING FOUR BEAM METAL CRANE AND TRUNNION HOOKS

hoisting engine built by the Lidgerwood Mfg. Co., New York. The drum is driven through reduction gears by a 220-volt, 150-horsepower motor operating at 240 revolutions per minute. Each top is of the McKee revolving type and is driven by a 10-horsepower motor. A limit switch is geared to the driving shaft of the revolving hopper and turns one revolution for every 1/6 revolution of the hopper. Both bells are steam operated. When dismantling is necessary the top is served by a monorail crane.

Gas from the furnace is led above the charging platform by four cast-iron uptakes, 90 degrees apart. A bleeder is mounted on one of the uptake pipes and is equipped with a bell which opens downward. When a slip occurs, the bell is held shut by the gas pressure. This assures the recovery of all stock which is blown into the dust catcher. Downcomer pipes lead from each uptake and converge in two main downcomers which enter the side of the dust catcher shown in Fig. 5. The gas then passes into the secondary dust catcher and can be sealed with water by means of a U-tube which connects the two dust catchers. Material from both dust-catchers is emptied into hopper cars placed in the dust-catcher house as illustrated in Fig. 5. The building is equipped with two rolling steel doors built by the Kinnear Mfg. Co., Columbus, O. A draft stack carries the dust about 50 feet in the air, while the dust catcher is discharging. The dust is thoroughly sprinkled by sprays issuing from pipes at the apex of the container.

The gas enters a Brassert washer where nearly all dust, not deposited in the dust catchers, is extracted. The water for the washer is supplied at a

FIG. 11—POURING SIDE OF THE 80-TON OPEN HEARTHS, SHOWING TROUGH CRANES, SLAG THIMBLES AND LADLE HOUSINGS

pressure of 39 pounds from a 10-inch line equipped with a double basket screen. Further cleaning is accomplished in the "sow" drier which is internally sprayed by twelve 2-inch lines by-passed indirectly from a 5-inch manifold. Entrance to the interior of the drier is by two manholes equipped with counterbalanced lever-operated doors. The water leaves the drier through three U-tubes which discharge into elevated funnels and the gas is distributed to the stoves and boilers. The gas legs which feed the stoves lead from the top of the common main and discharge into one end of a cleaning chamber. Each leg is equipped with a butterfly valve. The base of the gas burner is installed on the opposite end of the cleaning chamber. The blowing engines

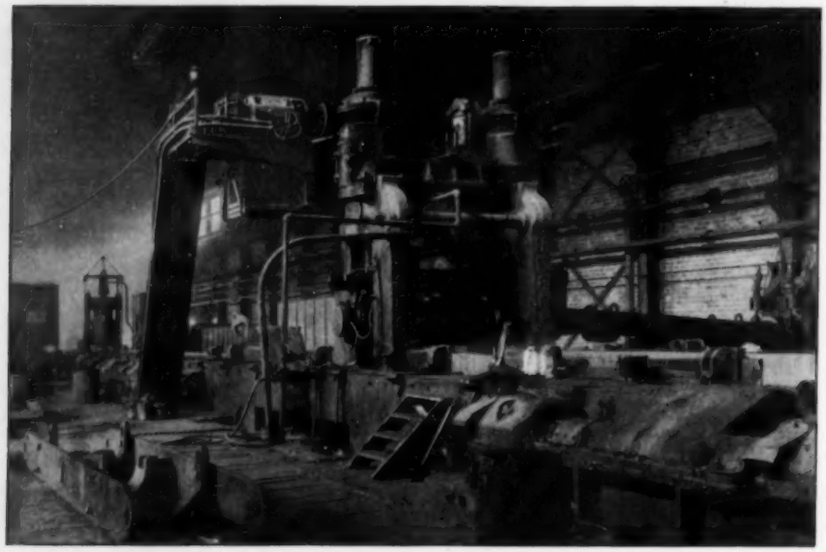

FIG. 12—BLOOMER ROLLS EQUIPPED WITH ELECTRICALLY DRIVEN SCREW-DOWNS AND AN INDIVIDUAL ACCUMULATOR

which serve Nos. 3 and 4 furnaces will be described in a later issue of THE IRON TRADE REVIEW.

The product of the four furnaces is either utilized in the open-hearth department or cast in pigs and sold. Cast houses of ample floor area adjoin Nos. 1 and 4 furnaces at the north and south, respectively, and an unusually long cast house lies between the iron notches of Nos. 2 and 3 furnaces. The dimensions of these three floors insure ample facilities for casting in sand in case the pig machine or ladles are out of commission.

Disposal of the Metal

The iron is tapped into ladle cars running on a track east of the three cast houses. The metal not required for the mills is taken to a short pour pig casting machine built by Heyl & Patterson, Pittsburgh, and situated north east of No. 1 furnace. The ladles are removed from the car trucks by a cross-bar equipped with trunnion hooks and placed in position on a pouring stand. The sheave block and hook from which the cross-bar is suspended is raised and lowered by the movement of a drum operated by a 20-horsepower variable speed motor running at from 500 to 1500 revolutions per minute. The ladle is tilted by an auxiliary cable actuated by the same motor.

The metal flows from the ladle along a main runner to the feeder trough which discharges directly into the molds of the two conveyors of the pig machine. The pig molds receive a slurry of lime as they return to the filling position.

The hot metal required in the open-hearth department is transferred to a 1000-ton mixer in 50-ton ladles handled by a 75-ton, four-beam, electric traveling crane built by the Morgan Engineering Co., Alliance, O. The mixer, which was built by the Pennsylvania Engineering Works, New Castle, Pa., receives the iron through a brick-lined hinged door, raised or lowered by cables attached to an electrically operated drum. The bath of iron in the mixer is kept warm and newly lined ladles are dried by gas brought from the coke ovens through a 6-inch line. Each end of the mixer is equipped with a gas chamber. Air for combustion is supplied by a 4-inch centrifugal blower built by the B. F. Sturtevant Co., Boston, and driven by a 5-horsepower motor. The mixer, which was placed in operation Feb. 17, 1916, still retains the original 30-inch lining. The good wearing qualities of the lining are probably due to the water sprayed upon the surface of the mixer at the slag line and at the jams of the pouring spout. The vessel is tilted by two 150-horsepower motors operating through reduction gears.

Hot metal from the mixer is tapped into a 60-ton ladle mounted on a platform scale of 200,000 pounds capacity made by the Fairbanks Co., New York. An electric locomotive transfers the ladle to the open-hearth department.

Open-Hearth Department

The melting department of the steel plant consists of twelve 80-ton basic open-hearth furnaces, and was placed in operation Jan. 1, 1916. The hearths of the furnaces are 36 x 15 feet. All of the furnaces are equipped with roofs of the Orth type. The regenerators are equipped with horizontal checkers butterfly air valves and Dyblie-type gas valves.

Nine of the furnaces employ coke-oven gas and tar while three use producer gas. The tar is delivered from the coke plant in standard tank cars. It is pumped from the cars to two 11,240-gallon storage tanks, 10 feet in diameter and 17 feet long, by a 10 x 8 x 12-inch pump. The tar is circulated through the delivery mains by two 5 x 8-inch triple-cylinder pumps. The three pumps are belt-driven from a common shaft connected to a 10-horsepower motor operating at 720 revolutions per minute.

The producer gas is generated in 27 producers of the Hughes type housed in a building parallel to and west of the open-hearth structure. Each gas producer is equipped with a mechanical poker and ash discharger. The coal is crushed in a spiked-cylinder type crusher driven by a 35-horsepower motor. Two skips, driven by a 50-horsepower automatic-stop motor, hoist the coal to the receiving hopper over the producers. The doors of this hopper are hydraulically controlled. The crushed coal is weighed in a hopper car built by the Atlas Car & Mfg. Co., Cleveland, on a 144 x 90-inch platform scale of 30,000 pounds capacity, located on the charging floor. The ashes are discharged from the producers into an electrically driven hopper car which empties into a single skip car operated by a 7½-horsepower motor. This skip car discharges into an elevated hopper which in turn feeds the ashes into railroad cars below.

Waste Heat Utilized in Boilers

Each open-hearth furnace is equipped with 375-horsepower, waste-heat boilers manufactured by the Babcock & Wilcox Co., New York, and housed in the gas producer building. The boilers are equipped with centrifugal fans which ex-

haust the gases from the stacks of the furnaces, force them through the boilers and discharge them again into the stack. The speed of the fan is reduced from 3800 to 735 revolutions per minute through reduction gears. Six of the fans are driven by a 48½-horsepower high-pressure steam turbine manufactured by the Terry Steam Turbine Co., Hartford, Conn., and two are electrically driven. The fans were built by the Greene Engineering Co., East Chicago, Ind.

Various materials used in the open-hearth furnaces are stored in a stock yard served by two 10-ton cranes equipped with lifting magnets. Three ground-level railroad tracks, one of which is equipped with an 8 x 9-foot platform scale of 60,000 pounds capacity, extend through the yard. The cranes and part of the yard are protected from the weather by a steel frame building covered with corrugated iron. A wooden trestle which supports six ore bins, extends through the building and serves the calcine department. Limestone is unloaded from railroad cars into steel bins, from which it can be drawn nto a bucket, hosted by a 10-ton crane, and empted n one of the two vertical, continuous lime kilns heated by coke-oven gas. When the process of calcination is complete, the burned lime is passed through a continuous Gates crusher, consisting of a spindle mounted on a chilled-iron crushing head. The hopper-shaped top shell is lined with concave chilled plates, and the crushing is done in the annular space between the chilled surfaces. The crushed lime is then conveyed to bins and fed into the open-hearth scoops as required.

The heavy melting scrap, ore, etc., is brought to the open-hearth charging floor in steel charging boxes, 84 x 26 x 17, made by the Pittsburgh Steel Foundry Co., Pittsburgh. The boxes are fed into the furnaces by two low-type charging machines built by the Morgan Engineering Co., Alliance, O. The charging side of the 80-ton furnaces is shown in Fig. 10, and the pouring side of the same battery in Fig. 11.

Handling the Ingots

The stripping department, soaking pits, blooming mills and bar mills are in a large building east of and parallel to the open-hearth building. The ingot molds, billets and blooms are stored in the yard between the two structures.

After the ingot molds have been filled, they are carried, three on a car, to the south end of the mill building where the ingots are stripped by a 10-ton crane type stripper made by the Morgan Engineering Co., Alliance, O. The ingots are handled in the soaking pit department by two 10-ton pit cranes built by the same company.

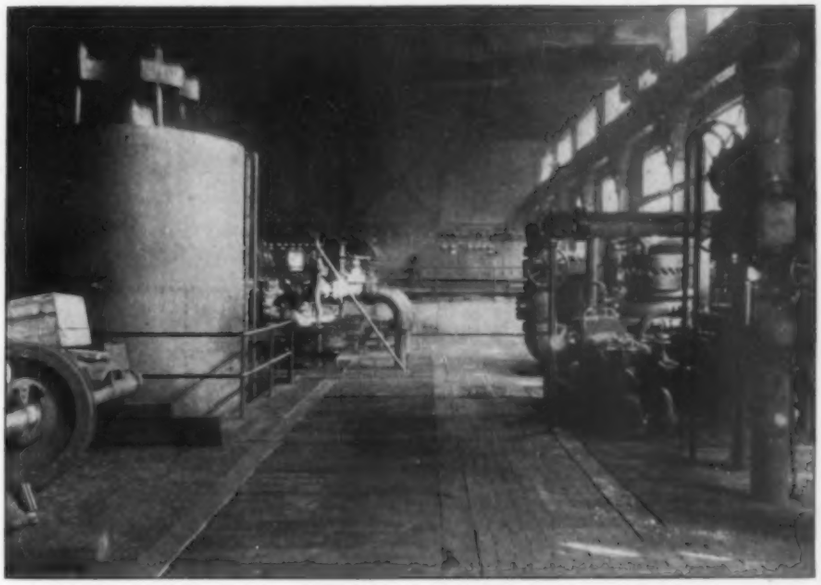

FIG. 13—PUMP HOUSE AND SUBSTATION AT BLOOMER DEPARTMENT

Each of the 24 soaking pits is 5 1/3 feet wide, 8 feet long and 11 feet deep and accommodates six 7200-pound ingots, 20 x 22 inches, or five 10,200-pound ingots, 22 x 28 inches. The aggregate capacity of the pits is about 1800 tons per day. All pit covers are operated hydraulically. Coke-oven gas is employed for heating the pits, but when necessary, producer gas can be used, three producers taking care of 16 pits.

The ingots are transferred from the pits onto a buggy and delivered to an electrically operated approach table which serves the two-high, 40-inch blooming mill. This mill, shown in Fig. 12 and built by the United Engineering & Foundry Co., Pittsburgh, is equipped with hydraulic side guards and Kennedy manipulators and has a monthly capacity of 42,000 tons. The upper roll is raised or lowered by an electrically-driven screw-down and is directly connected to an individual accumulator which automatically maintains a constant pressure of 550 pounds per square inch.

The rolls are directly connected through nickel steel, spur gears to a reversing, twin tandem, steam-driven engine which is shown in Fig. 14. The engine is rated at 34,000 horsepower and was built by the Mesta Machine Co., Pittsburgh. The high pressure cylinder is 48 x 60 inches and the low pressure cylinder is 84 x 60 inches. The engine is controlled through a single lever, throttle valve, balanced by a steam jack. Individual guide barrels are employed. The engine is equipped with four bearings and two bed plates,

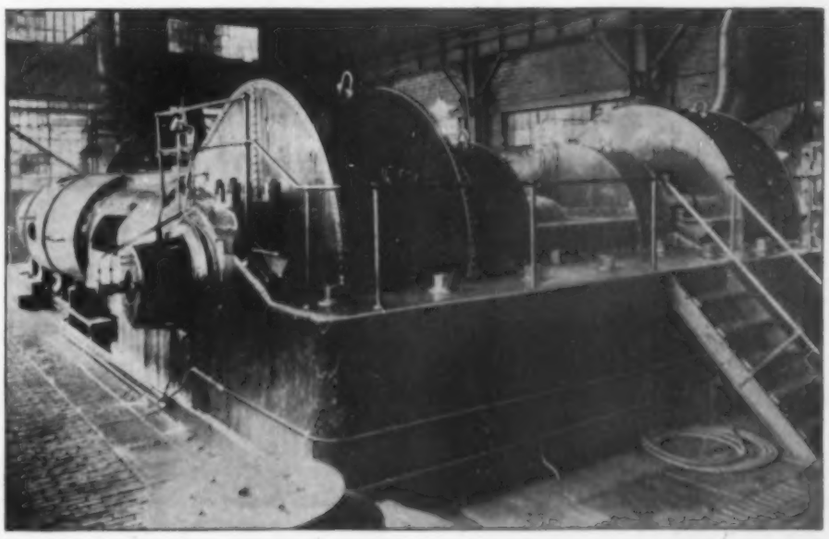

FIG. 14—BLOOMING MILL ENGINE WHICH DEVELOPS 34,000 HORSEPOWER

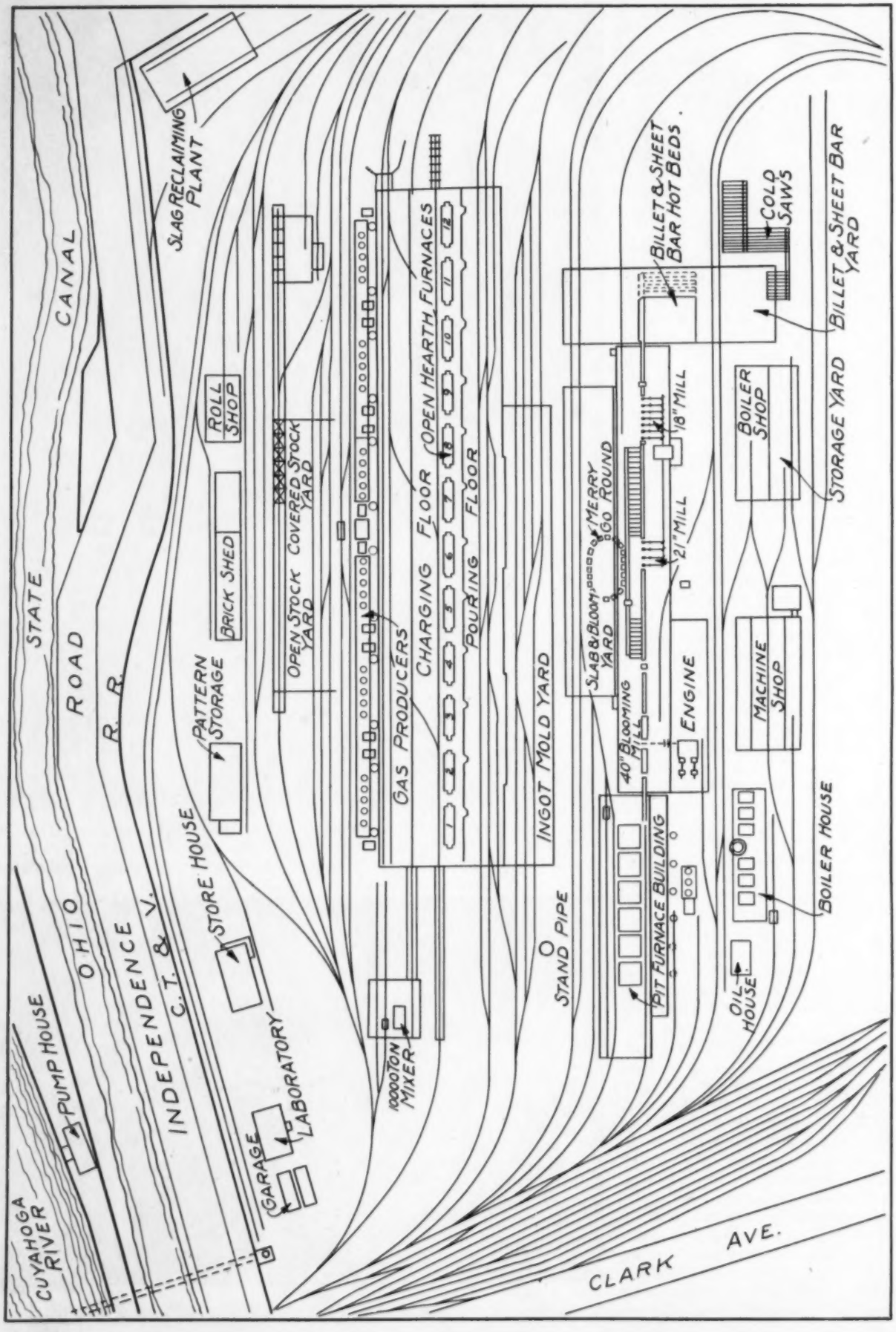

FIG. 15—PLAN OF MILL, SHOWING LOCATION OF GAS PRODUCERS, OPEN-HEARTH FURNACES, BLOOMING AND FINISHING MILLS, AND POWER PLANT

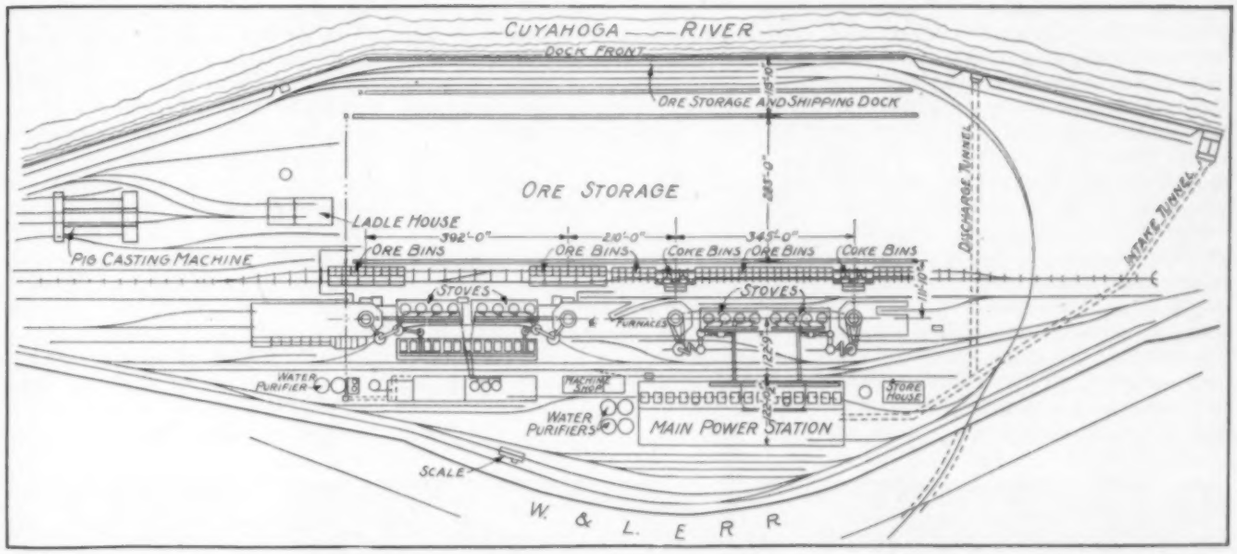

FIG. 16—PLAN OF BLAST FURNACE PLANT, SHOWING ARRANGEMENT OF DOCK, ORE YARD, BINS, FURNACES, CASTING MACHINE AND POWER STATION

each plate weighing 225,000 pounds. The crankshaft is 24 inches in diameter, steel forged, hollow-bored and carries a cast steel counterbalance which weighs 30 tons. This shaft was forged at the Krupp works and is thought to have been the last to enter this country from Germany since the outbreak of the war.

Standpipe water for hydraulic purposes is brought to the blooming mill engine room and filtered. It then passes into a well, 9 feet deep, which serves two 24 x 11 x 24-inch hydraulic pumps. The outlets of both are connected to an equalizer which acts as a governor and maintains a pressure of about 550 pounds per square inch. Purified water is pumped into a preheater and delivered to the boilers at 210 degrees Fahr. by a 14 x 8¼ x 16-inch, duplex, steam pump and a steam turbine which discharges at the rate of 600 gallons per minute. The purified water is supplied from the purification plant located in the main power building on the blast furnace side of the river.

Current is generated in the main power house and transmitted to a steel mill sub-station located in the engine room, shown in Fig. 13. The substation is provided with two 1000-kilowatt, 250-volt, generators driven by two 1440-horsepower, 6600-volt, 3-phase, synchronous motors. In the rear of a 32 x 8-foot, remote-control switchboard constructed of monson slate, are two bus stations which are equipped with explosion doors and high-tension, oil switches. A 230-volt, 3-phase, 25-cycle, motor-generator set and four floor-type transformers are installed. A 60-ton, double-hook crane serves this department.

When rolling squares the heavy end of the ingot is rolled first and passed to a 10 x 10 hydraulic shear directly beyond the bloomer. This shear is equipped with an individual accumulator. After the cut is made the first section of the bloom is passed over a hook-and-rail-type, transfer table to a table leading back to an electrically-driven 54-inch hot-cut saw. The second section of the bloom is directed straight ahead to a 21-inch, four-stand, continuous mill where it is rolled preparatory to finishing in the form of a sheet bar. Four passes through this mill give the oval shape and one set of passes through the 18-inch mill produces the finished sheet bar, which is then transferred to the 4-inch scraper tables shown in Fig. 6. Scale pockets are provided for each bed and have a capacity of 100,000

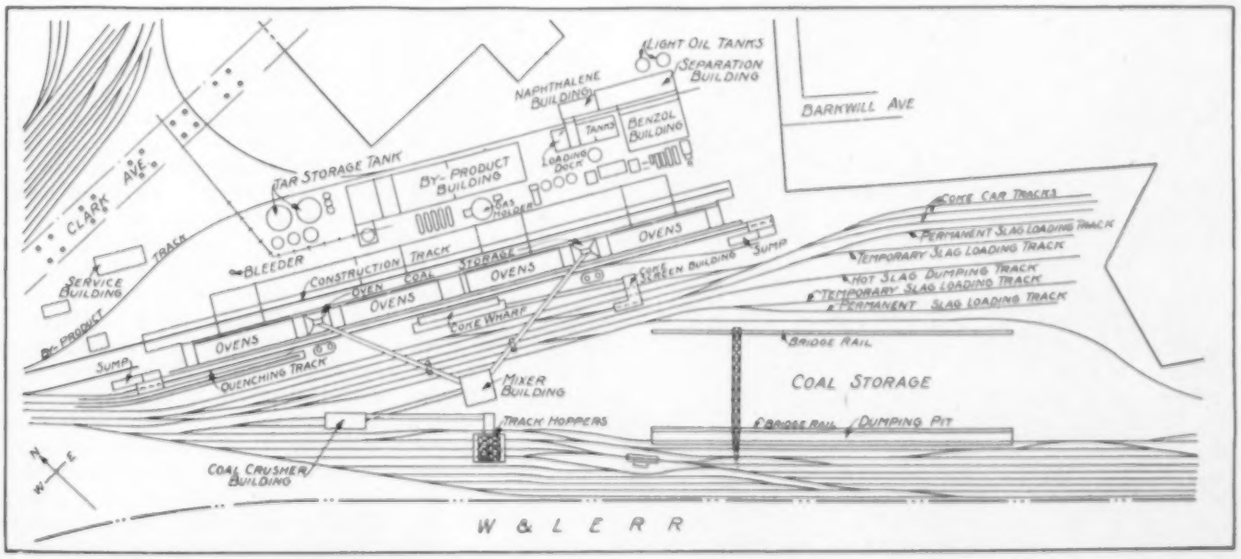

FIG. 17—PLAN OF COKE PLANT SHOWING LOCATION OF COAL STORAGE, OVENS, AND BY-PRODUCT DEPARTMENT

pounds. The beds are served by a 15-ton traveling crane which has a span of 120 feet. In case the bar is to be cut in multiples, it is transferred from the cooling bed to a friction, cold-cut sawing machine equipped with a 52-inch blade. The saw, made by J. T. Ryerson & Son, Chicago, is driven by a 45-horsepower motor.

The 18 and 21-inch mills were built by the Morgan Construction Co., Worcester, Mass., and are driven through a common shaft and spur gears by a 6600-volt, 5750-horsepower motor manufactured by the General Electric Co., Schenectady, N. Y. The motor develops 95 revolutions per minute with no load and 92½ revolutions per minute under maximum load. The 21-inch mill, as shown in Fig. 9, is a four-stand, continuous train of rolls and is built to produce slabs and billets in sizes under 12 x 3 and 4 x 4 inches, respectively. Sheet bars from 8 to 12 inches wide and billets from 1½ to 3 inches wide are rolled on the 18-inch six-stand continuous mill which has a monthly capacity of about 40,000 tons. Edger rolls are placed between No. 1 and No. 2 stands and No. 3 and No. 4 stands, as shown in Fig. 7.

When rolling flats, the finished product is cut by a flying shear placed at the extreme end of the mill. When the material is to be cut into multiples it is transferred to an alligator shear, driven by a 75-horsepower motor. The 40-inch blooming mill rolls blooms from 4 x 4 inches to 16 x 16 inches and slabs from 12 x 3 inches to 24 x 8 inches. In either case the material passes to the hydraulic shear where the front end is cropped, the discard falling into a crop-container below. After passing over the transfer table, the stock is cut to specified lengths by an 8 x 36-inch shear. The shear is equipped with a flywheel and driven by a 150-horsepower, continuous running motor, the operator closing the clutch when it is desired to make a cut. The finished blooms or slabs, while being conveyed from the shears, are automatically removed from the back-shear tables by an electrically-driven kick-off. The material is received by one of the merry-go-round carriages, as illustrated in Fig. 8, and travels to the billet yard. Two 10-ton cranes equipped with magnets distribute the material into cars for shipment.

Steam for the steel mill is generated in six 823-horsepower boilers erected by the Babcock & Wilcox Co., New York. All boilers are equipped with chain-grate stokers, five of which were built by the Green Engineering Co., East Chicago, Ind., and one by the Cox Traveling Grate Co., Hazleton, Pa. The stokers are shown in Fig. 15. Coke-oven gas is used in two of the boilers. Each unit contains 630 tubes, 3¼-inch diameter; three steel steam drums, 42-inch diameter; and three mud drums, 48-inch diameter. About 55,000 pounds of open-hearth steel is used in the construction of each boiler. Exhaust gases from all units are discharged in a common brick stack, centrally located.

The machine shop is equipped with nine lathes, ranging from 14 to 60 inch; one 24-inch slotting machine; one 6-foot boring mill; one 6-foot radial drill press; one 4-foot, open-side planer; three small drill presses; two shapers, 24 and 26 inches, respectively; two power saws; and three emery wheels. All machines are driven by individual motors. The department is served by a 20-ton Morgan crane. The building also houses the pipe and electrical departments.

Water for steel mill use is taken from the Cuyahoga river. The pump house, which is located on the east bank of the river, is equipped with three vertical, sediment screens which are raised or lowered by a monorail crane. Five centrifugal pumps, built by the De Laval Steam Turbine Co., Trenton, N. J., draw the screened water from a common 9½-foot tunnel. Four of the pumps are rated at 5000 gallons per minute and one is rated at 6000 gallons per minute when operating at 1450 revolutions per minute. Each pump is driven by a 6600-volt, 235-horsepower motor. The motor operates at 1500 revolutions under no load and 1475 revolutions under maximum load. All controlling devices are installed on a 4 x 2½-foot, monson-slate, instrument board which is located on the north balcony of the building. A 5-ton, hand-operated crane, manufactured by the Euclid Crane & Hoist Co., Euclid, O., serves this building.

Supplies used in conjunction with

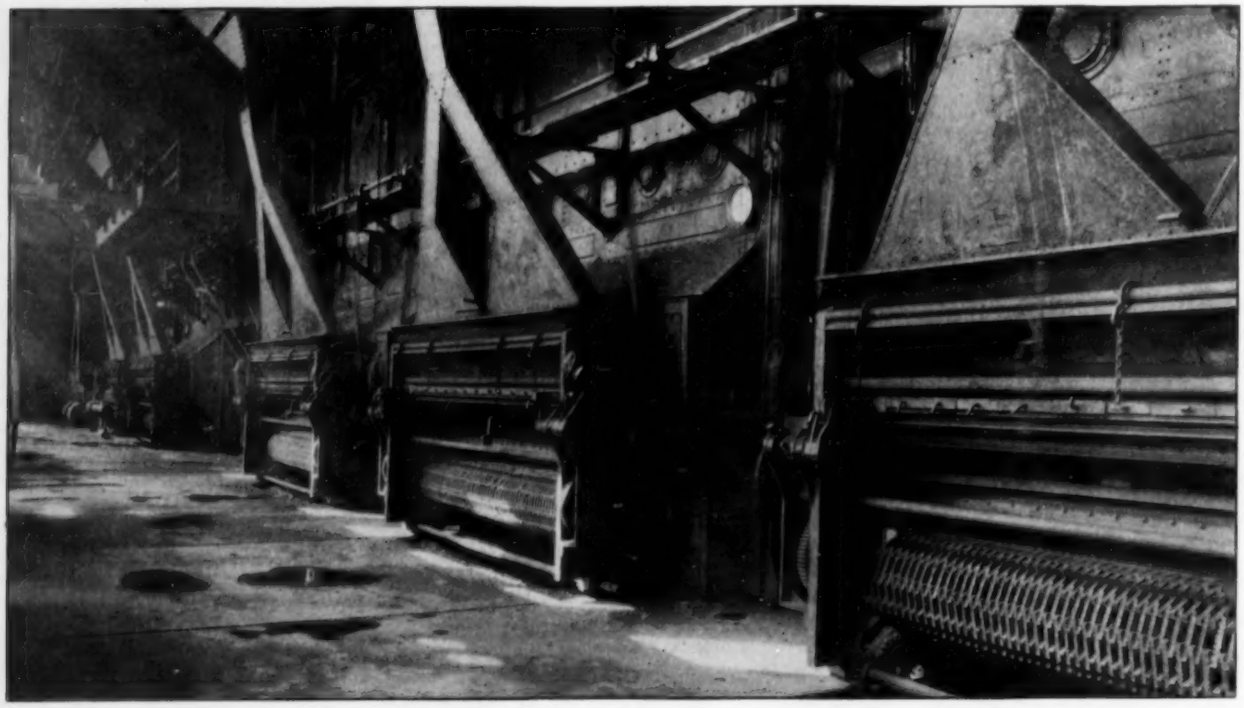

FIG. 18—STEEL MILL BOILERS SHOWING STOKERS AND EQUIPMENT

steel plant operation are kept in a two-story, brick warehouse west of the mixer building The pattern and carpenter shop departments are housed in a three-story brick building north of the storeroom. An elevator with a platform space of 10 x 10½ feet carries materials to the upper stories. The elevator, shown in Fig. 7, was built by the Otis Elevator Co., New York. The main floor of the shops is equipped with two lathes, one 36-inch band saw, one 16-inch circular saw, one 24-inch planer, one 4-inch bench planer; one 27-inch jointer, one 44-inch grindstone and one 20-inch emery wheel. All machines are electrically driven. The second and third floors are used for storage purposes.

204-*Oven Coke Plant*

The coke plant located on the east side of the river, was built by the H. Koppers Co., Pittsburgh, and placed in operation Nov. 9, 1916. The four batteries, each containing 51 ovens, were originally designed for 15-hour coke but are operating at present on an 18-hour basis with a monthly coal consumption of 100,000 tons and a corresponding coke production of 70,000 tons. Each oven is 40 feet long, 10 feet high, 19½ inches wide, with a 2½-inch taper, and is equipped with four 14-inch charging doors. There are 16 vertical flues on the pusher side and 14 vertical flues on the discharge side. The gas leaves the oven at a temperature of 350 degrees Cent. and is reversed every half hour. The reversing valves are located under the oven coal storage bins and are operated simultaneously by a 5½-horsepower motor which attains a speed of 800 revolutions per minute. The volume of gases is measured by a 16-inch self-recording, floor-type venturi meter manufactured by the Builders Iron Foundry, Providence, R. I. Each battery of ovens is connected by an underground flue which leads to a steel exhaust stack, 250 feet high and 8½ feet diameter. The unusual height of the stacks is due to the difficulty experienced in securing sufficient draft in shorter stacks in this district. About 41 per cent of the gas made is used to heat the ovens while the remaining 59 per cent is used at the open hearths, soaking pits, forges, etc.

The coal for the ovens is stored in a yard having a capacity of 125,000 tons. The yard is served by a bridge having a 200-foot span and built by the Brown Hoisting Machinery Co., Cleveland. The coal is crushed in four crushers made by the Pennsylvania Crusher Co., Philadelphia, so that 80 per cent passes through a ⅛-inch mesh screen. Each machine is driven by a 6600-volt, 400-horsepower motor manufactured by the Westinghouse Electric & Mfg. Co., Pittsburgh. The fuel is then elevated to four 500-ton steel mixer tanks which supply the material to two 1800-ton oven storage houses on a 42-inch conveyor belt, driven by a 100-horsepower motor.

Each storage house is equipped with 16 lever-operated doors arranged four doors in a row. Three electrically driven charging cars built by the Atlas Car & Mfg. Co., Cleveland, serve the four batteries. Each car has a capacity of 12¼ tons of powdered coal.

Eight and three-quarters tons of coke are produced from each charge of 12¼ tons of coal. The coke is transferred from the oven to a quenching car by one of three coke pushers designed by the Wellman-Seaver-Morgan Co., Cleveland. The quenching car is then removed to the quenching house by an electric locomotive which has a drawbar pull of 8000 pounds and a speed of 7 miles per hour. The quenching houses are located near Nos. 1 and 4 batteries. Two 12-inch water mains perforated with ½-inch holes are placed about 4 feet above the coke car. Water is supplied to these mains by an overhead tank, shown in Fig. 2, which has a capacity of 20,000 gallons. The overflow water from the gas coolers is pumped into this tank by a centrifugal pump operated by a 35-horsepower motor and at 1460 revolutions per minute under full load. The coke is quenched for 40 seconds and contains less than 2 per cent moisture. It is then transferred to a centrally-located coke wharf, 164 feet long. At the bottom of this wharf there are 28 slatted doors which control the amount of coke deposited on the rotary type feeder. This cylindrical feeder charges the coke onto a 42-inch belt which conveys and dumps it onto a 1¼-inch mesh, sloping screen located on the top floor of the screening building. The coke passing over the screen is for blast furnace use and is fed onto a belt conveyor which empties into cars. The tailings fall onto a ½-inch mesh shaker screen, 11½ x 4 feet, actuated by a 20-horsepower motor. The coke which passes over this screen is discharged into cars below and is sold as domestic fuel. The coke breeze is used at the soaking pits.

Two by-pass gas mains 40 feet long lead from each battery of ovens and connect with a common gas main which is run parallel to the charging side of the ovens. Each by-pass main is equipped with an automatic gas pressure regulator driven by a reversible motor which automatically operates a butterfly valve. The regulators were built by the Northwestern Mfg. Co., Milwaukee. Molten tar is circulated through these mains and absorbs the ammonia liquor and tar from the gases. The gas from the common main is passed six times through oval-shaped, vertical coolers. Each of the four coolers is 29 x 7½ x 27½ feet, and contains 1860 pipes. The tubes are 3 inches diameter and 22 feet high, and if connected end to end would reach nearly eight miles. Eighty per cent of the tar is extracted from the gases while they are in transit from the ovens to the coolers. The gas is directed at a pressure of 10 inches of water to three exhaust fans, installed by the General Electric Co., Schenectady, N. Y., which revolves at from 3600 to 4300 revolutions per minute and are individually driven by 300 to 500-horsepower Curtis steam turbines. The speed of the exhaust fans is controlled by gas operated governors manufactured by the Isbell-Porter Co., Newark, N. J. Each exhaust fan handles the gas from 102 ovens at a temperature of 60 degrees Cent. and discharges it at 65 inches, water gage, into the tar extractors. After the gas passes through the reheaters it commingles with diluted sulphuric acid in the saturators and deposits ammonium sulphate crystals. Acid is fed to these saturators by gravity from three elevated lead-lined storage tanks, 10 x 28 feet, which have a capacity of 210,000 pounds of acid. The liquor is transferred from a saturator to three centrifugal separators which are revolved by a single-acting, vertical steam engine built by the E. H. Wachs Co., Chicago. When the liquor is evaporated about 600 pounds of ammonium sulphate are recovered at each drawing. This material is stored in a brick building, 142½ feet long, which has capacity for three months' supply.

Washing the Gas

The gas from the saturators passes into the main gas line which leads to the final tower washers and scrubbers, 20 x 90 feet, located at the southeast end of the plant near the benzol department. After the final cleaning, the gas enters a gasometer which has a capacity of 30,000 cubic feet. From here the gas pressure is increased by two boosters, one of which is driven by a 750-horsepower motor and the other by a 730-horsepower steam turbine. These compressors distribute about 800,000 cubic feet of coke-oven gas per hour to the open-hearth and gas producer departments. Any excess gas is passed to a bleeder equipped with a water seal and ignited at the top by an electric spark. The bleeder is shown in Fig. 3.

The pump room is located in the north bay of the compressor station. Tar is loaded from the storage tank into tank cars by an 8 x 9-inch, triple-cylinder pump with a capacity of 167 gallons per minute. Two circulating liquor pumps, 7 x 9 inches, each having

a capacity of 134 gallons per minute, transfer the ammonia from the storage tanks to the three 2000-gallon stills housed in the by-product building. Two hot-drain pumps of the same size transfer the surplus ammonia from the stills to the storage tanks. Three flushing pumps, 13 x 14 inches, circulate the tar from the storage tanks through the gas mains leading from the ovens to the primary coolers. These pumps have a capacity of 667 gallons per minute. The pumps are all belt-driven from a common shaft operated by a 100-horsepower motor. In case the electric power fails, the shaft can be clutched indirectly to a vertical, steam-driven engine. All pumps were built by the Aldrich Pump Co., Allentown, Pa.

The by-product storage tanks are located north of the by-product building. Ammonia liquor and tar are separated by gravity in a steel tank 28 feet in diameter and 40 feet high. As these two products separate, the ammonia is fed into two 175,000-gallon storage tanks, 25 feet in diameter and 36½ feet high. The tar passes into two 500,000-gallon storage tanks, 52 feet in diameter and 33 feet high.

Work has been started on the construction of a $11,600 30 x 100-foot brick service building for the coke oven department. The structure will contain shower baths, lockers, toilets and a rest room and will be devoted entirely to the foremen. The floors will be of reinforced concrete.

Luxemburg Steel Industry

The effect of the war on the iron and steel industry of Luxemburg is shown in a book on this subject which recently was prepared for the Luxemburg chamber of commerce. The book points out that the Luxemburg works, owing to their close proximity to the theater of war, have been forced to suspend activities considerably. The Minette ore mines were obliged to shut down part of their works owing to the shortage of supplies of coal and coke. Most of the duchy's 47 blast furnaces were closed down, only seven being in operation in September, 1914. Following is a table showing production for 1913, 1914 and 1916 in metric tons of 2204.6 pounds:

	1913	1914	1916
Blast furnaces.	2,547,861	1,827,270	1,580,530
Steel works...	1,182,227	1,136,495	935,716
Foundries	26,513	22,954	24,572

From 1913 to 1916, inclusive, ordinary grades of iron dropped from 2,360,487 to 1,400,270 metric tons. Puddling iron slumped from 15,361 to 410 metric tons. Foundry iron, however, advanced to 179,750 tons in 1916, a gain of approximately 7000 tons over the production in 1913.

Book Review

The Principles of Iron Founding, by Richard Moldenke; cloth; 517 pages, 6 x 9 inches; published by the McGraw-Hill Book Co., Inc., and furnished by THE IRON TRADE REVIEW for $4.00 net.

The history of iron founding is so closely bound up with that of the human race that a man need not necessarily be an iron founder to be interested in that industry. From the days of Tubal Cain, when we first find historical mention of the manufacture and use of iron, that metal has occupied a position of ever growing importance in the life of man. Today we take its presence so much as a matter of course, that only a sudden cutting-off of the supply could make us realize how very important its use has become.

"The Principles of Iron Founding" is, therefore, a book devoted to a subject very worthy of study, both by the foundryman, who can make practical use of it, and by the layman who has a desire for knowledge for its own sake.

The opening chapter of the book traces the manufacture of iron back past its earliest recorded history into the period which, according to the author, is wrongly designated as the "bronze" age. "That the 'bronze' age is really a misnomer must be evident from the fact that the metallurgy of iron is much simpler than that of copper. Primeval man must have been aware of this situation and have used iron implements at least as early as bronze ones, if not before. The only records of these times are furnished by the content of burial places, and it would indeed be strange if on opening such mounds any iron had escaped the solvent action of the ground waters of passing ages. Hence remains of bronze alone have been discovered."

The efforts of the ancient iron masters, or "furnace men" are then described, their labors resulting now in failure and now in success. The story is told briefly but effectively, and the various threads leading through France, England, Germany, Russia and finally this country are followed up to the present day. Having started with Tubal Cain, we find at the end of the chapter the names of W. J. Keep, professors W. C. Unwin, F. Osmond, H. M. Howe, and A. Sauveur, and others equally familiar and important.

The historical foundation of the book laid, the author then proceeds to build the rest of the structure in logical sequence. Chapter II discusses the relation of the industry today to the other important activities of man. The good foundryman of necessity is informed about allied industries "so that he may be in a position to buy economically and timely, be able to detect inferiority in supplies bought from personal knowledge of the processes involved in their manufacture, know the problems confronting his customers, and thus be able to serve them intelligently."

In addition he must study other broader problems connected with his business. He must have some knowledge of the relation of the foundry to commerce and finance, and on interfoundry relations. He must be prepared to cope with labor problems and other questions relating to internal policy. The organization of the plant is discussed in Chapter III. The main essentials of a foundry organization are pointed out and briefly described.

The historical and economic aspects of the industry having been disposed of, the remainder of the book is devoted to the more strictly technical discussion. Chapter headings such as Outline of Iron Metallurgy; Outline of Iron Making Processes; Properties of Cast Iron; Classification of Castings; Foundry Raw Materials; The Technology of Combustion; Melting Processes; Mixture Making, and Testing Cast Iron, give one a pretty clear idea of the field covered.

In the chapter entitled, "Outline of Iron Metallurgy", we find brief sketches showing the relation of the element iron, and its compounds to the various divisions of the iron industry, together with a discussion of the general processes involved. In Chapter V the various iron-making processes are described, as are also the various types of furnace in which the processes are carried on. The properties of cast iron are covered thoroughly, 80 pages being devoted to this subject. The book is the result of years of research work, both in the foundry and the laboratory. A complete and interesting discussion of each topic treated is the result.

To Salvage Plants

The Empire State Steel Products Co., Inc., 910 Park Row building, New York, has been reorganized to conduct a general business in iron and steel products, scrap iron and metals, rails, pipe, new and used machinery and equipment of all kinds. Plants will be bought, sold and dismantled. The officers are: President, M. D. Adelson, vice president and general manager, James P. Touhill; secretary and treasurer, Robert G. Jeffery; assistant manager, Albert R. Bergstrom. Mr. Jeffery formerly was with the United States Metal & Mfg. Co., and Mr. Bergstrom, formerly with E. B. Leaf & Co.

Transverse Fissures in Steel Rails

This Type of Fatigue Fracture is the Result of Cooling Strains Undergone in Manufacture and Cold Rolling Action of Heavy Wheel Loads in Service—Fracture Always Found in Rail Head

BY JAMES E. HOWARD

ON AUG. 25, 1911, a rail failed on the Lehigh Valley railroad, causing a disastrous wreck. The surface of the fracture was in a plane at right angles to the length of the rail. A dark-colored, oval spot existed on this surface, located on the gage side of the head, representing the part of the rail which was the first to fracture. The nucleus of this spot showed that the fracture had an interior origin. Other fractures of this kind, the peripheries of which had not reached the surface of the rail, presented surfaces having a silvery luster. The darkened surface of the present fracture was caused, doubtless, by the air having had access to it.

This fracture was recognized as a fatigue fracture, of modified type, its interior origin having been due to a component in the rail which is not usually present in cases of fatigue fractures. The metal next the running surface of the head of the rail was in a state of internal compression, this being the component not commonly met with in other cases, and which caused the fracture to have its interior origin. For the purpose of giving this modified type of fatigue fracture a specific name, for identification, the term "transverse fissure" was applied.

Transverse Fissures and Fatigue Fractures

No mystery was thought to attach to its formation, or to its development. The explanation of its occurrence was obvious in the light of common knowledge upon the behavior of steel under repeated alternate stresses. By reason of the state of internal compression at the running surface, the maximum tensile stresses in the head, under bending loads, were along an interior element. Here the tensile strains were higher than in the fibers more remote from the neutral axis. Under such conditions the fracture of the rail would be expected to have an interior origin. A discussion of the subject of transverse fissures essentially becomes a discussion of fatigue fractures, since they are identical.

The descriptive term employed, merely for the identification of this type of fatigue fracture, had the appearance of creating alarm. Apprehensions arose that a new phenomenon in the physical properties of steel had presented itself, the explanation of which was sought in every detail in the manufacture of the rail, omitting consideration, however, of the effects of service conditions, where the explanation really lay. Under this illusory search the subject soon took on a nebulous state; the distinguishing characteristics of a transverse fissure were lost sight of, and quite dissimilar fractures were reported under the same general terminology.

Application of Woehler's Law

In the classical tests of Woehler, some 50 years ago, we were told about the effects of repeated alternate stresses in causing the rupture of metals. Shreve, in 1876, in the preface of his translation of Spangenberg's experiments, said: "The Fatigue of Metals is the name which has been given to the effect produced by oft-repeated strains. * * * Spangenberg's experiments were in continuation of Woehler's.

The Watertown arsenal tests, 1888 to 1908, showed the limiting value for steels to be in the vicinity of 40,000 pounds per square inch for practically unlimited endurance of repeated alternate stresses. A certain number of repetitions of higher stresses, even as high as 60,000 pounds per square inch may be endured for a time by some grades, but the life of steels exposed to alternate stresses which exceed 40,000 pounds per square inch has been found to be comparatively short.

Brittleness of fracture, in all grades of steel, is characteristic of fatigue tests. Brittleness under repeated stresses, therefore, does not constitute evidence of defective or inferior metal. Primitive toughness is of value to meet occasional overloads, at certain stages, but its value in prolonging the life of steel under repeated alternate stresses of moderate degree, if it has an influence, is not known. There are certain zones for each grade of steel within which its endurance is practically unlimited, and above which repeated stresses soon result in rupture. A fatigue fracture may be made in any piece of steel. It is only necessary that a given load shall be repeated a sufficient number of times, when rupture will ensue.

Experimental reseacrh with carefully prepared bars has shown that the magnitude of such strains in steels of high resistance is limited to about one and one-third thousandths of the length of the uniformly strained part, a strain which corresponds to a stress of 40,000 pounds per square inch. Lower strains define the limiting stresses for medium grades of steel. Accepting the results of these experimental bars, it would be undesirable to submit carbon steel to repeated alternate stresses in excess of 40,000 pounds per square inch, since this stress would be expected to eventually cause rupture.

In the laboratory, a steel of about 85 per cent carbon displayed the greatest endurance. There are reasons for preferring a lower carbon in rails, and with the lowering of the carbon content a lower limit of endurance would be looked for, other considerations remaining unchanged.

Steel rails, in the track, are subjected to bending stresses, the magnitude of which depends primarily upon the amount of the wheel loads; the number of repetitions within a given interval of time depending upon the density of traffic.

Rails in service not infrequently show appreciable local bends, acquired after they have been in the track. These bends represent permanent sets given the rails by loads which have exceeded the elastic limit of the steel. Some rails are bent downward at their ends, others are bent at regular intervals corresponding to the length of the peripheries of driving wheels of locomotives which have been over the rails, the latter permanent bends being due to the dynamic augment of the drivers.

Classes of Internal Strains

There are internal strains in rails which result from conditions attending their manufacture, and those which are acquired after the rails have reached the track. During fabrication, cooling strains are acquired. The shape of a rail is such that it is peculiarly susceptible to the acquiring of strains under ordinary conditions of cooling. The stage at which these cooling strains are chiefly acquired is after the rail has

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Abstract of a paper to be presented at the New York meeting of the American Institute of Mining Engineers, February, 1918. The author, James E. Howard, is engineer-physicist, interstate commerce commission, Washington.

left the last pass of the rail mill, and has become a finished rail.

Normally, the parts first to cool are temporarily put into a state of internal tension, which is reversed to a state of compression when the entire mass has reached atmospheric temperature. When the rail is cold, it is common to find the flanges in a state of internal compression, with the metal along the middle of the base in a state of tension. At the junction of the web with the head and the base, a state of tension is common. The peripheral metal of the head is left in compression, with the interior of the head in tension. The cooling strains are usually much greater in the base than in the head of the rail. Cooling strains in the flanges of thin-flange rails have been found as high as 18,000 pounds per square inch compression, with metal in close proximity at the middle of the base in a state of tension. Longitudinal strains are referred to in these remarks. It is obvious that shearing strains will be set up by these contiguous internal strains of tension and compression. Accelerated air cooling increases the magnitude of the cooling strains.

Hypothetical Loading of Rail in Which Internal Strains Pre-existed

Rail under assumed bending stress of tension in head, pounds per square inch	Longitudinal fiber stress, pounds per square inch	
	Running surface of head	Interior element in region of transverse fissures
No wheel load	15,300 compression	5,245 tension
15,300 fiber stress	Zero stress	17,485 tension
30,600 fiber stress	15,300 tension	29,725 tension
40,000 fiber stress	24,700 tension	37,245 tension

Cold Rolling Action on Rail

When the rail reaches the track, cold-rolling of the running surface of the head takes place under the action of the wheel pressures. The top of the head then acquires a higher state of internal compression than left by normal cooling, the strains in the head acquiring an ascendency over those of the base. Internal strains of compression next the running surface have been found in rails from the track corresponding to over 20,000 pounds per square inch stress.

Internal strains from wheel loads are unavoidable. The hardest rails are not exempt from this action of the wheels, nor do the lower wheel loads fail to introduce internal strains. An experimental inquiry into the effects of wheel pressures showed that a wheel load of 15,000 pounds introduced strains that were higher, superficially, than those resulting from the higher wheel loads of 25,000 and 35,000 pounds. It was also noted that rerolling with 35,000 pounds, after lower wheel pressures had been used, resulted in diminished internal strains over those due to the lower pressure.

In this connection, it is necessary to take into account the volume of the metal directly affected by the cold-rolling, and also the effect of repeated alternate stresses on the physical properties of the steel. The depth of penetration was found to be greater with the higher wheel loads than with the lighter loads or with the peining. The ratio of the volume of metal directly affected by the cold-rolling to that of the reacting metal is also a matter for consideration. The interior of the head is put into a state of tension to balance the volume of metal which is in a state of compression. Tensile stresses in the interior of the head, equivalent to the measured strains, have reached values of 8000 to 9000 pounds per square inch.

A rail of sufficient hardness to retain the shape of its head is well adapted to acquire and retain internal strains. Lateral flow of the metal necessarily tends to relieve longitudinal strains. The presence of a fin at the side of the head is evidence of lateral flow having taken place, and this flow should be attended with some relief to the longitudinal strains. The relation between direct and crosswise strains expressed by Poisson's ratio, having reference to the effect of external loads, does not prevail in cases of internal strains set up during cooling or resulting from cold-rolling. Compression of the metal in one direction is not attended with negative strains at right angles thereto, in cases of internal strains. A state of internal compression may exist in both lengthwise and crosswise directions. The two components which tend to cause fatigue fractures are the direct bending stresses from the wheel loads, and the internal strains introduced by the cold-rolling of the wheels on the head of the rail. The latter are responsible for a disturbance in the physical properties in addition to the introduction of internal strains.

Referring to the location in the rails in which transverse fissures are prevalent, they occur in the head, and not in the web or the base. They commonly make their appearance on the gage side of the head, or central, over the web. In a lot of 663 transverse fissures, 535 were located on the gage side of the head, 128 over the web, and none on the outside of the head. It has been found that transverse fissures, made by progressive gagging of new rails, can be located at will on the right or the left side of the head, or central, according to the manner of applying the load. Twenty-four transverse fissures were experimently made in new rails by progressive gagging. By progressive gagging, is meant that the rail was gagged at close intervals along its entire length, first on the head and then on the base, repeating the process until rupture ensued. The number of blows required to be struck at any one place ranged from 800 to 4000. The total number per rail length of 33 feet was from 50,000 to 250,000 blows.

Gagging and Cold Rolling

Efforts to produce transverse fissures by repeated gagging in one plane only were unsuccessful. Such rails displayed the common type of fatigue fracture; that is, the fractures had exterior origins of each case. Progressive gagging has an effect akin to the cold-rolling of the wheels.

Critical examinations have shown transverse fissures to have their origins in metal microscopically sound and normal in structure. Diligent research has failed to reveal microdefects to which the origins of the fractures could be attributed. The composition of the steel at and in the vicinity of the fissures has shown no chemical reason why the fissures should have their origins at the places where they were found. There has been no example of a transverse fissure in a rail which has not been in service. Rolling conditions would preclude the presence of a transverse fissure in an advanced stage of development in a new rail, excepting experimental fissures. The reduction of the metal in the rolls orients slag and other inclusions, arranging them in a direction parallel to the length of the rail, and not crosswise.

It is well known that slag inclusions are present in some degree in most steels. Slag filaments are drawn out and may be detected in the cross-section of the rail. In longitudinal sections they are at times prominently shown; but such longitudinal seaminess, when it exists, has no connection with the formation of transverse fissures.

It not infrequently happens, however, that longitudinal seams of another kind are developed in conjunction with transverse fissures, wheel pressures being the common cause for each. Shearing

strains are set up in the head of the rail by the wheel pressures When an acicular streak is reached, which may represent a slag inclusion, opportunity is afforded for the starting of a longitudinal seam. Shearing fractures which develop in vertical planes are designated as split heads. In other cases, the separation takes place in horizontal or oblique planes, and these latter may be developed independently or associated with transverse fissures. Each of these types of rupture was represented in the rail which failed on the Lehigh Valley railroad.

The effect of gagging has been referred to in respect to introducing internal strains or in modifying those which preexisted. Rail sections were subjected to normal and excessive gagging, also to the more severe ordeal of being struck with the tup of a drop testing machine. Microscopic examination directed to ascertain the effect, if perceptible, did not show any appreciable distortion of structure either at the places directly acted upon, or in other parts of the cross-sections of the rails.

Frequent use has been made of the strain gage in the examination of steel rails. The strain gage offers an opportunity to measure changes in dimensions not readily accomplished by other means. On a gaged length of 10 inches, it is not difficult to detect a change in length of one part in fifty thousand, and not infrequently a change of one part in one hundred thousand may be reliably shown. Under the microscope forms appear, but they are of such a character that a distortion equivalent to a stress of say 40,000 pounds per square inch, the assumed limiting stress for steel to retain its integrity unimpaired, would escape notice, whereas a distortion of one-hundredth of this amount would be detectable with the strain gage.

The relations between the forms shown by the microscope or the micro constituents as they have been designated and the ability of the steel to endure long continued alternate stresses have not been shown. In the use of materials subjected to strains, or their equivalent stresses represent the fundamental features upon which it is essential to acquire data.

Fiber Stresses

For the purpose of illustrating the relations between the fiber stresses at the running surface of the head of the rail and along an interior element, in the region in which transverse fissures have their origin, some hypothetical cases of loading will be presented. The values of the internal strains used are those which have been found in the measured strains of rails that have developed transverse fissures in service. An initial state of compression at the running surface of the head of 15,300 pounds per square inch was found by measurement, and a state of tension of 5245 pounds per square inch along an interior element. Each of these values is frequently exceeded in rails from the track; therefore the computed results will be taken as exhibiting conservative relations. In tabular form these computed results are as shown in the accompanying table. It is not held that these relations will strictly be realized, but it is believed that substantially such relations may exist between the metal at the top of the head and along an interior element, and that the interior elements will retain the state of tensile ascendency under the usual range of bending stresses, which are received by the rail in the track. Under bending stresses, which are not unusual, the computed results call for a tensile stress in the interior of the head 100 per cent above that at the running surface. The development of an interior fracture by repeated stresses under these conditions appears to represent normal behavior.

Attention has so generally centered upon the results of the drop test, the bending test, or the tensile test, in respect to the display of primitive ductility, that the phases through which rupture is reached by repeated stresses have not received adequate consideration. Specifications governing the acceptance of the metal rigorously demand that a certain elongation shall be displayed. The elongation called for may be only a few hundredths of an inch per inch of length of sample, but such display is made the decisive measure for the acceptance of the steel. It would not be incompatible with experimental results for the steel which was deficient one-hundredth of an inch in its primitive display of elongation to show under repeated stresses an aggregate elastic extension of several miles, so radically different may be its primitive behavior and its behavior under long-continued alternate stresses.

It is desired to emphasize the fact that the durability of a rail consists of its ability to retain its integrity under repeated deformations. A direct test consists of subjecting the rail to repeated deformations, conducted upon the shape and dimensions in which it is used. The results of other tests may be accepted as indexical of the properties desired, provided the relations between the two are established. In general, however, direct methods are preferred to indirect ones.

In order to show the diversity of views and opinions which have been expressed upon the causes of transverse fissures, the following extract is made from the report of the Committee on Rails and Equipment, of the National Association of Railway Commissioners, at its twenty-seventh annual convention, San Francisco, October, 1915.

"Summarizing the causes ascribed as responsible for the formation of transverse fissures, * * * we have the following:

1. Unsoundness of the ingot, blow holes and piping.
2. Segregation, in the ingot.
3. Rolling green ingots.
4. Rolling strains of the rail mill.
5. Direct rolling from the ingot to the rail. (Conversely, avoiding transverse fissures by using reheated blooms.)
6. Angular friction resulting from the coning of the wheels.
7. Greater prevalence in open-hearth than bessemer steel.
8. Incomplete transformations in the steel, interior metal of the head being left in the austenitic form.
9. Conditions at the hot bed.
10. Gagging the rail, in straightening.
11. The position of the rail in the ingot.
12. Rails rolled in the winter months most likely to develop transverse fissures.
13. The direction they pass through the rail mill to be considered with reference to the direction of traffic.
14. Some latent tendency introduced in the steel, in the process of manufacture, which track conditions render active.
15. Inherent weak portions, such as porosity, sponginess and slag inclusions.
16. That certain heats are more susceptible than others.
17. That certain year's rolling were subject to suspicion.
18. That transverse fissures develop most rapidly when, under atmospheric conditions, the rail is expanding and contracting.
19. With summer temperatures, when the rails are fully expanded, increased thermal stress augments the internal strains of fabrication.
20. Another says, concerning summer months, that the strains are greatly relieved by reason of having reached their full expansion.
21. That rails under summer temperatures can better adapt themselves to reversals of stresses.
22. That there is a predominance of transverse fissures in rails of the heavier sections.
23. That the carbon should be limited in rails of 100 pounds and under.
24. That traffic conditions do not influence the development of transverse fissures.
25. That traffic conditions do influence their development."

The statement that a transverse fissure is a modified type of fatigue fracture is based upon the identity of the manifestations which attend and the conditions which lead to rupture in each case, and furthermore upon the absence of data leading to other explanation.

Deterioration of Coal

A report by Horace C. Porter and F. K. Ovitz on the deterioration in the heating value of coal during storage, covering a period of five years, was recently issued by the United States

bureau of mines. Tests with New River and Pittsburgh coal were made in order to determine the advantage to be gained by storing coal under water, particularly under salt water. The results show that New River coal under water effectively prevents deterioration of calorific value, and that storage in the air under severe conditions causes only small deterioration, about 1 per cent in one year's exposure and about 2 per cent in two years. After two years the loss is continuous but slow, reaching 2.5 to 3 per cent in five years. The deterioration of Pittsburgh coal during one year's open-air storage was practically negligible. During the second, third, fourth and fifth years the deterioration proceeded very slowly and did not reach an amount greater than 1.1 per cent in five years. The submerged portions likewise suffered a correspondingly small loss.

Canada's Output of Steel Continues to Grow

The mines branch of the department of mines, has received from the producers complete returns of the production of pig iron in Canada and complete returns of the production of steel ingots and castings during the first six months of 1917. The total production of pig iron during the first six months was 586,998 short tons, as against 562,097 tons during the first six months of 1916. The average monthly production in 1917 was 97,833 tons, as against an average monthly production of 97,438 tons for 1916. Furnaces were in blast at Sydney and North Sydney, N. S.; Hamilton, Port Colborne, Sault Ste. Marie, and Deseronton, Ont. The Deseronton furnace went into blast in May, having been out during the first four months. Small quantities of pig iron were also produced in electric furnaces from scrap steel at Orillia, Ont., and Montreal, Que. The total production of steel ingots and direct castings during the first six months was 836,149 short tons, as against 589,553 tons during the first six months of 1916. The average monthly production during the first half of 1917 was 139,358 tons as against an average production for the corresponding period of 1916 of 106,268 tons.

Cross Current Predeterminations

WHENEVER alternating-current generators are driven by reciprocating engines, the fluctuating crank effort causes oscillatory movements to be superimposed upon the rotating armature parts. In parallel operation, such displacement movements are subject to a peculiar cumulative action, which, under adverse conditions, is liable to become so violent as to drive the armature far out of its course of uniform rotative speed. These statements are made in a paper by Louis Ilmer, entitled "Cross Current Predeterminations From Crank-Effort Diagrams," of which this article is an abstract. The original paper will be presented at the annual meeting of the American Society of Mechanical Engineers.

Acting alone, the irregular primary crank effort of the reciprocating engines accounts for but a relatively small portion of the excessive displacement movement to which the armature is subjected in parallel operation. Such small armature oscillations do, however, give rise to cross-current forces, which in turn tend to set up independent armature-displacement movements. The combined action of these two distinct periodic forces is likely to superimpose cumulative armature-displacement movements upon the rotating armature of far greater amplitude than could be produced by either component force acting alone.

The method deduced in this paper for arriving at such resultant armature-displacement increments is based upon finding the equivalent effect of the crank-effort and the cross-current-pull forces in terms of their respective sinuous sequence of force application. It will be shown that the actual crank-effort curve of any normal reciprocating engine may be approximated quite closely by means of an equivalent sine curve and that its characteristic accelerating effects may be expressed in terms of fairly simple harmonic-motion formulas. Furthermore, the independent sinuous oscillations which the periodic cross-current pull tends to superimpose upon paralleled armatures may likewise be taken into account by formulas of this kind.

It will further be shown that when a sinuous crank effort of a reciprocating engine works against a variable resistance, as fixed by the surging cross-current pull of the generator, the conditions become favorable for imposing cumulative oscillations upon the rotating armature and wheel parts. These parts are then alternately accelerated and retarded by the combined action of two distinct periodic forces, each of which has an independent period and each tends to set up independent armature oscillations. At times these two forces will be acting together, while at other times they will be acting in opposition, thus subjecting the armature and wheel parts to a cumulative oscillation about an imaginary position corresponding to that of uniform rotation.

The derived formulas make possible the predetermination of the probable ultimate armature-displacement shift as measured from an imaginary reference position, for any given set of assumptions as to characteristics of generator construction, crank effort, and wheel weight. The character and maximum amplitude of the cumulative armature movements are found to depend largely upon the relation between the time period of the sinuous crank-effort curve and that of the cross-current-pull curve. Under normal conditions, the difference in period between these two curves is most readily controlled by the selection of a suitable wheel weight.

When a light wheel is used for paralleled reciprocating engines, the armatures oscillate in a relatively rapid period and the maximum cumulative armature-displacement shift is shown to be approximately twice as large as when a relatively long resultant period of oscillation is obtained by the use of a heavy wheel.

The secondary effects which accompany the use of a light wheel are more likely to upset the engine regulation and in other ways lead to detrimental electrical disturbances. In the event that the wheel weight and governor characteristics are not aptly chosen, the resulting cumulative armature oscillations may set up a heavy cross-current flow of such magnitude as to interfere seriously with the successful operation of the paralleled generators.

The subject is treated in the following order in the original paper:

Principles underlying harmonic motion and their application in estimating initial armature displacements that result from the uneven primary crank effort of a reciprocating-engine drive.

The effect of such periodic displacement movements upon a single alternating-current generator when connected to independent bus bars.

The effect of periodic armature oscillations upon paralleled generators in setting up a variable resistance against which the engine must work; discussion of the cumulative oscillations which are likely to occur whenever a variable load of this kind is driven by the fluctuating crank effort of a reciprocating engine.

Conclusions:

Appendix: Characteristic behavior of an alternating-current generator and other electrical aspects of the parallel-running problem relating especially to cross-current pull and its effects in causing periodic variations in the engine load.

Coal Rise Stirs British

New Advances in Pig Iron and Finished Products Expected—Furnaces Need Repairs—Labor More Restless

Bureau of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Oct. 26.

THE recent advance in coal has produced a sort of ferment in every branch of the iron and steel trade. A rise of 2s 6d ($0.60) in coal is expected to mean an increase of 6s ($1.44) in coke. The figure tentatively given is 6s 3d ($1.50) per ton, but this is not quite fixed. Pig iron makers however, figure that the manufacture of a ton of pig iron must cost them from 10s to 15s ($2.40 to $3.60) more. Informal intimation has been given to the ministry of munitions that an advance will be asked for when the settlement of prices of materials makes it sufficiently clear what the advance on pig iron ought to be. All smelters state that their position is one of increasing difficulty. Some declare their inability to make a profit, and, on all hands, it is agreed that makers are sailing very close to the danger point. There are threats of a strike of ironstone miners, as some employers object to pay the higher wages. This attitude of proprietors is so unusual in these times that it may be merely an expedient to add emphasis to the appeal for higher selling prices. If anything like a labor difficulty does arise, the government will be obliged to intervene, and this can hardly do other than assist the re-opening of the price question.

There is extreme scarcity of pig iron. Smelters find it quite impossible to meet all demands upon them. Output generally is below what it should be. Months ago some furnace owners represented to the authorities the urgent necessity of repairs; but the latter excercised their veto in favor of getting all the iron they coulld to meet the urgent requirements of the moment. The result is that some of the furnaces must now receive instant attention and they are being blown out. Practically, all pig iron contracts now include the proviso applying whatever advance may be conceded as from the date of the contract.

High-Grade Iron Scarce

The output of high-grade iron is inadequate. Every ton of high-class Staffordshire foundry iron also goes into immediate consumption. A new furnace for making basic iron has been started in Derbyshire this week. Great efforts are being made to bring into action every available furnace. It is generally recognized that basic permanently will occupy a place in the range of British steel production it has never held before. In the Middlesbrough district the amount of business done is rather small, chiefly because the purchases there are usually made at the beginning of the month. The supplementary allocations chiefly are in foundry iron. The warrant stock continues stationary at 887 tons. A great deal more iron could be sold abroad if the requisite tonnage were available. Quotations are unchanged; the following are the rates: To Allies No. 1, 107s 6d ($25.80); No. 4 foundry, 101s 6d ($24.36); No. 4 forge, 100s 6d ($24.12), to home consumers; No. 3, 92s 6d ($22.20); No. 1, 96s 6d ($23.16). There is great stringency in regard to east coast hematite pig iron and great efforts are being made to increase production before the end of the year. Mixed numbers sell to home consumers at 122s 6d ($29.40). To increase the available labor in the north west of England, efforts are being made to enroll Scottish miners for the Cumberland ore mines.

Makers of finished iron and steel have displayed extraordinry patience with regard to selling prices. Some of the best brands of iron had their prices settled a year ago, and since that time every article used in the mill and forge has considerably increased in price while skilled men's wages have several times advanced. Latterly a movement has commenced for getting higher wages for workmen whose earnings are not regulated by the sliding scale. This movement has attained formidable proportions, one group after another, of skilled and unskilled workmen putting in their claim and, in the main, advances asked for have had to be conceded. The situation was reviewed at a meeting of ironmasters held in Birmingham this week, when the unanimous view was that with the new rise in the price of coal makers could go on no longer without an advance. It is impossible at present to fix the amount, chiefly because the makers of pig iron have not yet had their new rates fixed. But broadly speaking, the general view is that the rise will be at least 25s ($6.00) on all brands of finished iron.

Orders continue plentiful and the government manages to control all the output, but there is undoubtedly less pressure exercised for urgent delivery of war material, compared with two or three months ago. For best iron the demand tends to increase, chiefly because of the great urgency of shipbuilding material. Best iron for cables is being taken in great quantities. Prices which have the slightest freedom still remaining show an upward tendency and this applies especially to steel strip for which the minimum quotation is £18 ($86.40). The situation in the sheet trade has not altered. Makers are dissatisfied with the government price of £17 ($81.60) and for various reasons output shows a decreasing tendency. Large quantities of iron are being used at the local wagon-building works. Enormous business in rolling stock is being held up to the end of the war. There is great scarcity of puddled bars, some recognised makers having none whatever to offer. Prices range at about £12 10s ($60.00) to about £12 15s ($61.20). The Scotch steelworks are fully engaged. Export business has practically ceased except to allies, who get limited parcels. The tin plate trade is working under great pressure, but owing to the limited allowance of steel bars is unable to meet the demand. Latterly, the supply of raw steel has increased a little. We still are badly wanting steel from America. Moderate quantities of wire rods are coming through at about £27 ($129.60) per ton.

Doubles Its Foundry

The Bronzbraswyt Metals Co., 611 First National Bank building, Pittsburgh, has just completed doubling the size of its foundry at 4909-4911 Butler street, that city. The company makes bronzes, brasses and special metals, producing castings up to 3000 pounds. Officers of the company are: President, Thomas D. Maloney; secretary and treasurer, Joseph F. Erny. Fred W. Herman is sales manager and J. F. Leever is superintendent of the foundry.

Announcement is made by the Haynes Stellite Co., Kokomo, Ind., that in the future it will accept stellite scrap as an exchange value, to be credited against new orders for original material. Returnable scrap is limited to bar stock and special castings.

The annual meeting of the American Railway Engineering association will be held at the Congress hotel, Chicago, March 19 to 21, and the exhibit of the National Railway Appliance association will be held in the Coliseum, March 18 to 21.

Iron and Steel Exports Take Slump

Official Figures Show Shrinkage in Shipments of Various Materials During September—Total Drops Off More Than 35,000 Gross Tons—Barbed Wire One of Few Descriptions to Make Substantial Gain

A DOWNWARD turn in the trend of iron and steel exports is shown in statistics for September just issued by the bureau of foreign and domestic commerce. According to the official statement, total shipments aggregated 482,311 gross tons, as compared with 519,513 gross tons in the preceding month and 643,129 gross tons in September, 1916.

The decline was reflected in shipments of the majority of descriptions,

IRON ORE IMPORTS, TONS.

	Sept.,		9 months ending Sept.,	
	1917	1916	1917	1916
Spain	13,033	7,172	146,939	125,007
Sweden	.....	13,790	57,429	166,536
Canada	20,746	12,275	108,528	130,624
Cuba	40,803	70,750	346,468	529,841
Oth. countries	291	5,760	29,038	77,595
Total	74,873	109,747	688,402	1,029,603

pig iron dropping off approximately 18,000 gross tons, steel billets more than 30,000 gross tons, and a number of other materials undergoing a setback. To attribute this slump to any one specific reason would be difficult. It may be due in part to the fact that Great Britain gradually is becoming more self-sustaining in the matter of producing steel. Still

EXPORTS, GROSS TONS.

1916	Pig iron	Semi-finished material
Jan.	19,319	55,315
Feb.	15,061	87,406
Mar.	19,439	107,674
Apr.	18,518	88,764
May	28,293	142,782
June	48,770	116,316
July	28,718	135,827
Aug.	60,264	160,921
Sep.	64,122	163,104
Oct.	101,756	162,679
Nov.	102,786	125,038
Dec.	105,195	162,961
1917		
Jan.	69,146	183,636
Feb.	49,018	131,566
Mar.	69,629	193,469
Apr.	44,783	162,209
May	61,112	168,158
June	81,999	192,133
July	32,368	112,085
Aug.	60,489	189,083
Sep.	44,287	148,932

the chief cause, no doubt, lies in the heavy demand for bottoms for transporting munitions of all descriptions, including, in addition to iron and steel, such essentials as grain, clothing, etc.

Among the comparatively few products to make a gain during September, barbed wire made perhaps the biggest jump, going from 5817 gross tons in August to 28,984 in the following month. Steel rails also made a notable gain, increasing about 10,000 gross tons, or totaling 34,387 gross tons for the month. Smaller gains were made in structural iron and steel, hoops, bands and scroll, and pipes and fittings.

Using the nine-month period ending with September as a basis of comparison, exports of iron and steel products show an increase of 388,026 tons in the first nine months of 1917, compared with a similar period in 1916. This is at the rate of about 43,000 tons per month. Exports for the first nine months of 1917 totaled

IRON AND STEEL EXPORTS, GROSS TONS

	September,		Nine months end'g Sept.,	
	1917	1916	1917	1916
Scrap	1,459	36,519	136,311	158,352
Pig iron	44,287	64,122	515,769	302,504
Steel billets, ing. & bl'ms	148,932	163,104	1,478,640	1,058,109
Wire rods	15,893	10,793	115,571	118,487
Steel rails	34,387	86,676	373,922	391,449
Steel bars	47,576	64,168	470,773	589,199
Iron bars	3,089	6,948	39,559	59,175
Struc. iron and steel	21,156	29,336	222,446	211,869
Hoops, bands and scroll	5,079	4,556	41,695	33,252
Sh'ts & plates	66,190	44,583	606,555	370,956
Tin & terne plate	11,595	18,793	172,687	179,147
Barbed wire	28,984	42,404	138,897	341,912
All oth. wire	16,588	23,541	145,636	212,187
Cut nails	604	877	3,020	3,663
Wire nails	9,776	15,370	74,367	114,709
All oth. nails incl. tacks	1,543	1,685	14,568	7,724
Pipes & fit'gs.	19,836	25,283	152,946	161,167
R. R. spikes, bolts, nuts, riv. & wash.	4,921	4,145	38,022	42,062
Cast radiators	407	226	4,424	1,859
Total	482,311	643,129	4,745,808	4,357,782

4,745,808 tons, and for the first nine months of 1916, 4,357,782 tons.

Imports of iron and steel products into the United States during the month of September amounted to 20,196 tons. This shows a decrease from the September, 1916, figure of about 6000 tons, the total for that month being 26,006 tons, while in August, 1917, the tonnage was 22,635. The greatest decreases are shown in imports of pig iron, steel ingots, billets and blooms, bar iron and structural shapes. For the nine-month period ending with September, 1917, 279,681 tons of iron and steel products were shipped into this country. This is an increase of approximately 75,000 tons over the first nine months of 1916, when the imports totaled 203,025 tons.

Although the tonnage of iron and steel exports for September, 1917, was less than the total for the same month in 1916, the valuation for the former exceeded that for the latter. Exports for the month of September, 1917, were valued at $107,665,824, compared with $91,311,942 for September, 1916, and $90,351,388 for August, 1917. For the nine-month period, the 1917 and 1916 values were $911,438,464 and

IRON AND STEEL IMPORTS, GROSS TONS

	Sept.,		Nine months end'g Sept.,	
	1917	1916	1917	1916
Scrap	5,437	6,340	167,226	47,772
Pig iron	8,248	15,731	63,357	97,796
Steel ingots, bl'ms and billets	3,758	1,665	34,572	19,772
Wire rods	203	295	515	3,284
Rails	905	862	6,400	24,438
Bar iron	192	953	2,097	6,745
Structural	1,311	14	4,056	1,081
Sheets and plates	142	95	1,334	1,311
Tin and terne plate	.....	51	124	826
Total	20,196	26,006	279,681	203,025

$621,597,967, respectively. Imports for the month of September amounted to $2,345,896, compared with $2,865,200 a year ago, and for the first nine

IMPORTS AND EXPORTS, GROSS TONS.

1915	Imports	Exports
July	20,858	380,340
August	27,556	405,949
September	23,345	382,113
October	34,318	349,843
November	37,131	362,764
December	35,408	353,853
1916		
January	15,824	360,102
February	20,279	368,980
March	15,159	438,649
April	20,176	384,452
May	32,114	538,657
June	26,885	515,214
July	14,774	502,330
August	23,255	571,401
September	25,559	643,762
October	30,169	610,110
November	42,545	554,856
December	44,134	580,957
1917		
January	40,192	608,105
February	24,379	449,099
March	37,280	606,559
April	48,213	519,397
May	26,013	588,514
June	28,419	614,600
July	28,859	357,776
August	22,635	519,518
September	20,196	482,311

months the valuations were $20,453,873 and $20,639,455, respectively.

Although the tonnage of iron ore received in this country during the month of September slightly exceeded the August total, it was approximately 35,000 tons less than the amount shipped into this country in September a year ago. The September imports of iron ore amounted to 74,873 tons, compared with 63,571 tons in August, 1917, and 109,747 tons in September, 1916. The decrease in September is due largely

to the small tonnage of iron ore received from Cuba, and also to the fact that no ore was received from Sweden, while in September, 1916, 13,790 tons of Swedish ore were received in this country. For the nine months ending with September, 1916, imports of iron ore amounted to only 688,402 tons, while the nine-month total in 1916 was 1,029,603 tons.

Canada Gets Shell Orders

United States Government Places Big Contracts With Dominion Plants—Power Dictator Named—Planning for Future

TORONTO, Ont., Nov. 12.—Negotiations conducted by the imperial munitions board at Washington have resulted in the placing of large orders for 75-millimeter shells to be produced in Canadian plants for the United States government. It is stated that from 6,000,000 to 7,500,000 shells under the arrangement, will be produced in Canada, during the first seven months of 1918. The imperial munitions board will act for the United States authorities in placing the contracts and supervising the production of the shells in the Dominion. The United States ordnance department will supply the steel and component parts. The Canadian manufacturers will forge the steel, machine and assemble the shells. The Dominion government which has co-operated in the negotiations, through the department of customs, will facilitate the entry of steel and component parts into Canada and their reshipment as shells to the United States. The important announcement is particularly welcome by reason of the sharp decline in British orders for shells in Canada. This latest transaction will involve the expenditure of about $50,000,000, and hope is expressed that the United States government may find it desirable to make use of further equipment in Canada which is now employed in the production of shells for the imperial government. It is understood H. J. Fuller of the Canadian Fairbanks-Morse Co. is to be in charge of the New York end of the business.

In connection with the orders for munitions, the Canadian government has issued an order prohibiting the exportation from Canada of machinery and equipment of all kinds for the manufacture of war munitions except under license. This is applicable to Britain and British possessions as well as to foreign countries.

The Canadian government has appointed Sir Henry Drayton, chairman of the Canadian railway commission, as controller of the production and distribution of electrical energy in Ontario. His duties are to determine preference and priorities in the supply of power to factories and users engaged, directly or indirectly, in munition work, or work for any of the allied governments and for municipal and public utility requirements. His appointment is the result of a report made by him after the investigation of the serious power shortage in Ontario, estimated at 102,000 horsepower.

On Nov. 8 an order was issued by Sir Henry Drayton instructing all plants producing power at Niagara Falls to operate their plants at full capacity to relieve the shortage. They were also ordered to supply lists of their customers with information as for what purposes the power was used.

The tariff question is attracting some attention in connection with the parliamentary election, Dec. 17. Sir Wilfrid Laurrier, leader of the Liberal opposition in the manifesto recently issued defining his position declared himself in favor of abolishing the increase of 7½ per cent on foreign and 5 per cent on British imports imposed as a war tax, and the entire removal of all duties on agricultural implements and "other essentials" as demanded by the western farmers. The importance attached to the main issue, of conscription renders all other questions matters of secondary consideration.

President C. W. Sherman of the Dominion Foundries & Steel Co., Hamilton, is optimistic with regard to the future of the steel business in Canada. His company and its subsidiary, the Hamilton Steel Wheel Co., have already turned their attention to domestic business of the country. The Dominion Steel Foundries now is turning out steel plates in its new mill. The plates are being made from rejected shell steel and will be used mainly in ploughshares, mold boards, harrow discs, etc. Plates up to 36 inches wide can be made. The Hamilton Steel Wheel Co., which has been working on shell orders for some time, is making preparations for the manufacture of cast and forged steel wheels for railway service. A 20-inch rolling mill for making bar stock has been installed. Its output will be used largely in the manufacture of car axles.

Buys Texas Furnace

Tennessee Valley Iron Company to Move Works to Tennessee

The works of the Star and Crescent furnace at Rusk, Tex., together with all buildings, stoves, engines, rail and other equipment, has been purchased by the Tennessee Valley Iron & Railroad Co., and will be removed to the latter's property at Collinwood, Tenn. The plant upon being reconstructed will be operated on charcoal iron and will have a capacity of 100 tons a day. It is expected that operations will commence about March 1, 1918. The sale was negotiated by William Yule, of the Pioneer Coal & Coke Co., St. Louis.

The Tennessee company owns in fee 85,000 acres of land in Wayne and Hardin counties, which is said to contain large deposits of brown ore. Other improvements planned are the erection of saw mills and planing mills to handle the large amount of hardwood timber on the property and the construction of 18 miles of narrow gage track from Collinwood to Iron City. It is also the plan to start building at once 60 charcoal kilns of 80 cords capacity, and a distillation plant of 150 to 200 cords capacity.

The officers are: President, C. N. Brady; vice president, T. S. Bailie; secretary and treasurer, R. D. Baker. Among the larger stockholders are the above and the estate of J. W. Bailie, the Empire Lumber Co. and D. L. Gillespie, of Pittsburgh; H. B. Duncan and E. C. Stewart, of Washington, Pa.; Nelson C. Hubbard, W. P. Hubbard and J. C. McKinley, of Wheeling, W. Va.

Will Utilize Slag

Large slag banks which have accumulated at Lebanon, Pa., during many years from the operation of blast furnaces in that district, are to be utilized in the manufacture of roofing and in concrete work. The Lebanon Blast Furnace Co. has let a contract to the National Slag Co., Allentown, Pa., for removal of the slab deposits at the old Meily plant at Lebanon. The contract calls for the removal of approximately 200,000 cubic yards of the slag in the bank in two months. The Lebanon Blast Furnace Co. is in need of the site which the bank occupies.

The Philadelphia section of the Association of Iron & Steel Electrical Engineers held its November meeting recently at the Majestic hotel, Philadelphia.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

JOSEPH G. DEERICKS, has been made general manager of sales of the Pittsburgh Steel Co., succeeding the late Edmund Steytler. Mr. Deericks has been identified with the steel trade all of his business life. He was born in Cleveland in 1871 and received his education in the Cleveland schools. His first business association was with the American Wire Co., of that city, which later was absorbed by the American Steel & Wire Co. In 1899, Mr. Deericks went to New York and connected himself with the American Steel Hoop Co. When the United States Steel Corp. was formed he was moved to Pittsburgh, where, for a year and a half, he was associated with the Carnegie Steel Co. Subsequently he returned to New York to go with the American Steel & Wire Co., where he remained in charge of the sales of wire products to manufacturers in the eastern district. In April of this year he returned to Pittsburgh as assistant general manager of sales of the Pittsburgh Steel Co. He occupied this position up to the time of his promotion. Mr. Deericks is a member of the American Iron and Steel institute, the Engineers' club of New York, the Ohio Society of New York and the Pittsburgh Athletic association.

W. Karl Hilbrich has been made purchasing agent for the Erie Malleable Iron Co., Erie, Pa.

J. E. Tropp Jr. has been appointed superintendent of the Columbus, O., blast furnaces of the American Rolling Mill Co.

Percy G. Savage, chemist at the Norton Co., Worcester, Mass., has returned from a business trip to South America.

George W. Steenbergh now is special representative of the metal-cutting department of E. C. Atkinson & Co., Indianapolis.

Charles Manley has been named superintendent of machinery of the Missouri & North Arkansas railroad, with offices at Harrison, Ark.

Donald C. Wright has become affiliated with the Dodge Mfg. Co., Mishawaka, Ind., as manager of production. Mr. Wright formerly was engaged in work of a similar nature with the Remington Arms-Union Metallic Cartridge Co., Ilion, N. Y., where he was in charge of Enfield rifle work.

Arthur S. Brown, of the Heald Machine Co., Worcester, Mass., has been appointed state bank examiner by

JOSEPH G. DEERICKS

Gov. Samuel W. McCall, of Massachusetts.

E. A. Haskins, factory manager for the Detroit Motor Truck Co., has accepted a position as assistant chief engineer of the United States Motor Truck Co.

Richard Garlick, treasurer of the Youngstown Sheet & Tube Co., who has been in the east for several months recuperating from ill health, has returned to his desk.

James A. Farrell, president of the United States Steel Corp., has turned over his speed yacht to the government. This is the second boat owned by Mr. Farrell to be put in the government service.

C. H. Van Dyke has been elected vice president of the Manown Mfg. Co., Pittsburgh, producer of sleeves, nozzles and runner brick. Mr. Van Dyke succeeds H. A. Sechrist, who resigned to become associated with the Mt. Union Refractories Co., Mt. Union, Pa.

E. F. Moody, sales manager for Barney & Berry, Inc., Springfield, Mass., who has been commissioned as captain in the officers' reserve corps, has been assigned to duty in Washington.

H. Cole Estep, editorial director of *The Foundry*, gave an illustrated talk on "How Some Cleaning Room Problems Have Been Solved", before the New England Founders' association at the Exchange club, Boston, Nov. 14.

Charles D. Carey, formerly of the Robert W. Hunt Co. and the Bethlehem Steel Co., has been appointed assistant to the president of the Verona Steel Castings Co. and the Standard Motor Truck Co., subsidiaries of the Standard Steel Car Co.

J. F. Sells, of the engineering staff of the National X-Ray Reflector Co., 235 West Jackson boulevard, Chicago, has been appointed as consulting engineer for the Henry L. Doherty Co., which operates various light and power companies.

Stanton Griffith resigned Nov. 1 as superintendent of the foundry, patternshop and chemical laboratory of the Fairbanks-Morse Mfg. Co., Beloit, Wis., to accept the position of works manager of the South Side Foundry & Machine Co., Charleston, W. Va.

Schuyler Merritt, vice president of the Yale & Towne Mfg. Co., Stamford, Conn., has been elected to congress from the fourth Connecticut district to fill the unexpired term of the late Representative Ebenezer J. Hill. Mr. Merritt is a Republican.

Harry J. Marks now is in charge of the New York office of the Bound Brook Engine & Mfg. Co., Bound Brook, N. J. Mr. Marks formerly was with the American Engine & Electric Co., New York, which recently was acquired by the first-named company.

W. O. Renkin, who for several years was chief engineer of the A. M. Byers Co., Pittsburgh, has resigned to become manager of the engineering department of the Quigley Furnace Specialties Co., 26 Cortlandt street, New York, which specializes in pow-

dered coal equipment. Previous to his association with the Byers company, Mr. Renkin spent several years as resident engineer in charge of the organization and construction of the works of the Tata Iron & Steel Co., Sakchi, India.

E. A. Hawks, Detroit, has been appointed special representative of Youngstown Steel Car Co., Youngstown, O. His office will be in the Dime Bank building, Detroit, Mich.

Norman B. Hickox has been made sales and advertising manager of the National X-Ray Reflector Co., Chicago, to succeed E. H. Cameron, sales manager, who has removed to Seattle, Wash.

Irving T. Bush, founder and head of the Bush Terminal Co., New York, has been appointed chief executive officer of the newly created New York port war board, which is to mobilize port facilities in New York harbor in order to assure the maximum harbor efficiency.

Jay R. McColl, of Ammerman & McColl, and dean of engineering at the University of Detroit, has been named Michigan representative of the American Society of Heating and Ventilating Engineers on a committee cooperating with the labor committee of the council of defense to improve ventilation in workshops.

Robert P. Lamont, until recently a student at Princeton university, and son of Robert P. Lamont, president of the American Steel Foundries, has suffered the amputation of his left hand from wounds received in France. He originally left for France to engage in the ambulance service, but later was transferred to an ammunition train.

Elmer H. Fish, employment manager of the Norton Co., Worcester, Mass., has been appointed employment expert for the emergency fleet corporation and also a member of the New England committee on emergency war education. The first is a temporary position, while in the second he will act in a purely advisory capacity, neither of which will affect his position at the Norton Co.

E. W. Weaver, mechanical engineer with offices in Cleveland, has been appointed aeronautical mechanical engineer for the government. He will have charge of aeronautical designing at the government airplane plant at the Philadelphia navy yards. Mr. Weaver has had a number of years' experience in mechanical designing. In 1906, he was connected with the E. R. Thomas Motor Co., Buffalo. Later he was associated for five years with the Peerless Motor Car Co., Cleveland, and afterwards with the Gray & Davis interests, Boston, manufacturers of starting and lighting equipment. He then returned to Cleveland to take charge of designing for the Ferro Machine & Foundry Co.

Archibald Johnston, vice president of the Bethlehem Steel Co., has been elected mayor of the new third class city composed of the boroughs of Bethlehem and South Bethlehem, Pa., which last July voted to consolidate under the name of Bethlehem. Mr. Johnston had no opposition, having received more than 51 per cent of the vote cast at the primary election, thus making him the sole nominee.

Charles C. Capehart, superintendent of the bar mill at the Pittsburgh Crucible Steel Co.'s plant at Midland, Pa., has been promoted to chief inspector of the plant. J. N. Critchlow, former chief inspector, resigned to accept a similar position with the United Alloys Corp., Canton, O. M. E. Harty, efficiency expert, has been assigned the superintendency of the bar mill. E. T. Gants has been appointed steam and hydraulic engineer.

Charles F. Hall has been appointed production manager of the Booth-Hall Co., 565 West Washington street, Chicago. Prior to this appointment, Mr. Hall was chief structural engineer for Armour & Co. He also at one time was connected with the Illinois Steel Co. and was organizer and manager of the Hall Machinery Co. He is the inventor of a patented type of bascule bridge, rail joint, and several other mechanical devices.

Winfield F. Van Ornum, Worcester, Mass., for the past 10 years manager of the Norcross Brownstone Co., East Longmeadow, Mass., has resigned and accepted a position as purchasing agent for Fred T. Ley & Co., Springfield, Mass., at Bristol, Pa., where it is erecting a shipbuilding plant for the government. He will be in charge of the buying of iron and steel used at the plant and also of the awarding of subcontracts.

The American and Foreign Sales Corporation has been organized at Washington, D. C., for the purpose of rendering service for large manufacturers who want personal representation before the government and in this way a similar service also will be rendered to the various branches of the United States government. The offcers of this company follow: John L. Newbold, president; Ross P. Andrews, vice president; E. E. Thompson, secretary and treasurer, and Louis C. Witkowski, sales manager.

Toluol Taken

By Government for Making of Trinitrotoluol—Benzol Demand Heavy

New York, Nov. 9.—Several fair-sized blocks of toluol were taken over by the government this week for the making of trinitrotoluol. This is in line with the government's policy of late to commandeer supplies of toluol as rapidly as they become available. So eager is the government to get every pound of toluol that is produced that the makers now are refusing to sell even single drums to regular customers unless they first have obtained approval of the war industries board. Hence, the market on toluol is nominal, with the exception of government business which continues to go at the agreed price of $1.50 per gallon at producer's plant, according to quantity.

Coke Oven By-Products

Spot

Per Gallon at Producers Plant	
Pure benzol	$0.44 to .49
Toluol	1.70 to 1.80
Solvent naphtha	.17 to .20
Per Pound at Producers Plant.	
Phenol	$0.50
Per 100 Pounds at Seaboard	
Sulphate of ammonia	$4.90 to 5.00

Contract

Per Gallon at Producers Plant	
Pure benzol	$0.44 to .49
Toluol	1.50 to 1.80
Solvent naphtha	.17 to .20
Per Pound at Producers Plant	
Phenol (nominal)	$0.50
Per 100 Pounds at Seaboard	
Sulphate of ammonia	nominal

Phenol inquiries continue numerous and while large quantities are involved, not much business actually was transacted during the week. The market still may be quoted at 50 cents per pound at producer's plant, both for spot and contract.

Although solvent naphtha enjoyed a rather active inquiry this week, sales were small. Prices are unchanged at 17 to 20 cents per gallon at producer's plant, both for spot and contract. Nothing yet has come of the English inquiries previously noted, since the prohibitive freight rates prevent the booking of orders at bids of 80 cents c.i.f. Liverpool, per American gallon.

Sulphate of ammonia is quiet. Nothing has come of recent large foreign inquiries principally from British possessions. This inquiry is decreasing due to realization by the prospective buyers of the sold-up condition of the American market. Sales are restricted to a few spot carloads.

Japan is Getting Steel Liberally

Figures Compiled by Government Show Average Shipments Well Maintained and Indicate Embargo Not Designed for Compulsion—Negotiations for Transfer of Japanese Tonnage to Atlantic Now Are Nearing Completion

WASHINGTON, Nov. 13.—Japan now is getting more steel she needs from the United States than she did before the President announced the provisional embargo on exports. Figures compiled by the bureau of foreign and domestic commerce show that with the exception of July, the last half of which fell under the outgoing shipments restrictions, Japan's importation of steel has exceeded the average of the first seven months of the year. At the time the embargo was declared it was intimated the action, as far as ship steel was concerned, was to force Japan to place her surplus ocean tonnage in transatlantic service.

In view of the disclosure last week of the reiterated relation of the United States and Japan, primarily in regard to their joint policy affecting China but which indicated absolutely friendly kinship between the contracting nations, the bureau's steel export figures may have some significance. This may be true especially since only now apparently are negotiations nearing conclusion for the transfer of the Japanese vessels from Pacific trade. Assuredly Japan has not suffered for lack of ship steel from this country.

Average Well Maintained

Plates consigned to Japan in September, the last month for which export figures are available and the third under the export restrictions, aggregated 28,738 net tons. This is a decline from the 32,023 tons shipped in August but is a decided increase over the 23,351 tons average maintained in the seven preceding months. July's plate exportation to the far eastern empire was only 22,821 net tons, less by 530 tons than the average in which it was figured. The number of tons of sheet steel shipped to the islands of Nippon in September was 3269. In August the total was 2325 tons and in July 2296. The seven months' average was 2939. The combined plates and sheets tonnages thus consigned were as follows: September, 32,007; August, 34,349; July, 25,118; and seven months' average, 26,285. Shapes were billed to Japan in the following quantities: September, 3739 tons; August, 3122; July, 290; and seven months' average, 1895.

The accompanying table compares the above monthly exportations with the same months and materials in 1916.

	Plates		Sheets		Shapes	
	1917	1916	1917	1916	1917	1916
Sept.	28,738	8,790	3,269	47	3,739	3,378
Aug.	32,023	12.356	2,325	300	3,122	3,112
July	22,821	6,014	2,296	311	290	1,072
7 m. av.	23,351	5,343	2,939	384	1,895	1,014

Exportation of these materials has not only been maintained to Japan at better than normal rate but has continued to the world at large at about the normal ratio, despite the embargo and the red tape necessary in obtaining export licenses. In September 74,134 tons of sheets and plates were exported from the United States. The August figure was 83,930 and the July total 61,959 tons. The average for the first seven months of 1917 was 75,444. In June, 90,175 tons were exported to the world at large but the average shipment abroad in the fiscal year ending June 30, 1917, was only 51,238 net tons. The figure for September, 1916, was 49,933 tons and for August, 53,562. The July, 1917, exportation aggregated only 43,936 tons. The average in the first seven months of 1916 was 44,569 tons.

Shapes Show Falling Off

A decided falling off is noted, however, in the exportation of shapes to the nations of the world. In September the total was only 21,156 tons as against 29,336 a year ago. In August, 1916 and 1917, the figures were 27,581 and 19,418 tons, respectively. The July total was only 14,633 tons compared with 26,583 in the same month last year and the seven months average of the two years were 1917, 24,555 and 1916, 22,476.

In view of the announced policy of Japan and the United States as regards China it is interesting to note that the republic is getting more plates now than she did prior to the declaration of the embargo. In September she got 1091 tons; in August, 2467; July, 1143; and an average of 1219 in the first seven months of this year. A year ago consignments to China were as follows: September, 291; August, 45; July, 317, and an average of 326 tons in each of the preceding seven months.

Exportation of Plates Increases Almost Threefold

While the bureau of foreign and domestic commerce does not itemize as per country the tonnage of punched and shaped ship and tank plates, the record for September shows that 4386 tons of this specific material was exported to the world at large, as against 1823 tons in August and 1587 tons in July. This item has not been carried in the monthly commerce report prior to July this year.

Must Speed Up Steel For Ship Demands

WASHINGTON, Nov. 13.—Steel mills will have to speed up production to meet the tonnage requirements of the Emergency Fleet corporation which are expected to increase greatly as a result of Provost Marshal General Crowder exempting all shipyard employes from future drafts for the national army.

The influx of these new workers and the working of yards at full time capacity will demand that huge tonnages of steel be produced faster than is required under present conditions. This means every steel mill in the country will have to buckle down and operate at full speed. This extra burden must be carried while present demands for other war steel products also are being met.

No official announcement has been made of changes in the management of the shipping board or the Emergency Fleet corporation, but the evident illness of Admiral Capps, general manager of the corporation, and the tremendous amount of work thrown upon him have resulted, it is reported, in the virtual assumption of his duties by Charles A. Piez, president of the Link-Belt Co., Chicago, and who is vice president of the shipping board. James Heyworth, who has been made

assistant general manager, will handle wooden ship construction and Charles Day will handle steel ship fabrication. Admiral Capps is the nominal head of the construction end, but these men have relieved him to a large extent.

Will Sharply Cut Output of Passenger Cars

Washington, Nov. 12.—The output of passenger motor cars during 1918 may be reduced from a possible total of 1,750,000 to approximately 1,250,000 as a result of government plans to divert a portion of the motor car production capacity to war work. With the appointment of Hugh Chalmers as the third member of a committee which will establish headquarters in Washington details of the plan to put the auto industry to work on war materials will be worked out before the end of the year. Mr. Chalmers, chairman of the board of the Chalmers Motor Co., was named on the committee as representative of the National Automobile Chamber of Commerce, of which he is first vice president.

Other members of the committee are: John R. Lee of the Ford Motor Co., and A. W. Copland, president of the Detroit Gear & Machine Co., Detroit, representing accessory manufacturers. The committee will work in co-operation with the war industries board.

It is understood the first problem to be settled will be to determine what percentage of passenger car production will be curtailed. It is generally believed that this will be fixed at between 30 and 50 per cent. As the industry is expected to produce 1,500,000 cars this year and 1,750,000 in 1918, it is figured the production next year will be curtailed to about 1,250,000. Motor truck production this year is on a basis of 200,000, compared with 92,000 in 1916, owing to heavy demands for the vehicles from the war department. A heavy production of trucks, ambulances, aeroplanes, aeroplane engines, shells and various ordnance pieces will be undertaken by the automobile manufacturers.

Waterways Congress Will Convene at Capitol

With the purpose of formulating some plan whereby the waterways of the country may be placed to the best advantage in solving the serious transportation problems evolved by war, the National River and Harbors congress will hold its fourteenth annual convention in Washington, Dec. 5, 6 and 7. Ways and means will be discussed as to how the government, the cities and the people of the United States may most effectively co-operate to "Use the Waterways and Win the War". It will be the specific aim of the convention not to urge appropriations for new projects, but to devise means of supplementing the work of the railroads, which has assumed proportions too great for them to handle. It is pointed out by a leading authority that the railroads are carrying more freight than ever before in their history, but even when they have carried traffic up to 100 per cent of their capacity there still remains under present conditions perhaps 30 per cent of traffic which it is impossible for them to handle.

Continued Fall

Shown in Ferromanganese Imports—Manganese Ore Receipts Reduced

Imports of English ferromanganese have continued to increase over recent prior months, although they are far below corresponding months in 1916. The September shipments amount to 3402 gross tons compared to 2840 tons in August and 2037 tons in July, but were far under the September, 1916, total of 9787 tons. Manganese ore shipments fell off heavily to 36,755 gross tons in September. This compares with 87,650 tons in August, with 53,437 tons in July and with 73,536 tons in September, 1916.

The following table shows a comparison of exports in gross tons of various ferroalloys and metals for the period indicated:

	Sept.,		Nine months end'g Sept.,	
	1917	1916	1917	1916
Ferromanganese..	3,402	9,787	38,875	71,436
Ferrosilicon	920	550	7,807	5,071
Manganese ore..	36,755	73,536	494,633	469,222
Tungs. bear'g ore	305	143	3,042	3,001
Nickel, nickel oxide & matte..	5,257	6,335	46,155	45,993

Obituaries

Samuel B. Casseday, purchasing agent for the new C. W. Morse shipyard, Groton, Conn., was killed in an automobile accident in Franklin, Conn., recently.

Eugene V. Underhill, formerly with the Chas. A. Schieren Co., New York, died recently at the Lutheran hospital, that city. Mr. Underhill was 79 years of age.

John V. W. Reynders, son of J. V. W. Reynders, formerly vice president of the Pennsylvania Steel Co., and now chairman of the American Tube & Stamping Co., Bridgeport, Conn., was drowned from a seaplane off Bayshore, L. I., Nov. 4. Mr. Reynders was 22 years of age. He graduated from Princeton university last June and was attached to the United States naval station at Bayshore. He was soon to receive a commission as ensign.

Frederick T. Bulmer, assistant secretary of Phelps Dodge & Co., died Nov. 2 at El Paso, Texas, while on his way to Phoenix, Ariz., for his health. Mr. Bulmer was 55 years of age.

To Aid in War

Pressed Steel Industry Forms Committee to Fill Government Wants

With a view of providing a point of contact between the pressed steel industry and the government, the pressed steel war service committee has been organized at the request of the council of national defense, the war industries board and the United States chamber of commerce. One important service of the committee will be to furnish the government with information as to where pressed steel parts of all descriptions can be secured with the least preparation in the matter of dies, tools and machinery. In order that it may be able to furnish complete data on all such questions as may arise, the committee is sending blanks to each individual company throughout the country, requesting an itemized list of all descriptions of material produced and detailed information with regard to capacity, equipment, labor situation, etc.

The committee is made up of the following companies: Acklin Stamping Co., Toledo, O.; American Tube & Stamping Co., Bridgeport, Conn.; Bossert Corp., Utica, N. Y.; Boston Pressed Steel Co., Worcester, Mass.; Crosby Co., Buffalo; Detroit Pressed Steel Co., Detroit; Gier Pressed Steel Co., Lansing, Mich.; Geuder, Paeschke & Stamping Co., Cleveland; Hale & Kilburn Co., Philadelphia; Ireland & Matthews Mfg. Co., Detroit; Kales Stamping Co., Detroit; Frank Mossberg Co., Attleboro, Mass.; Savage Arms Corp., Sharon, Pa.; Sharon Steel Hoop Co., Sharon, Pa.; and the A. O. Smith Corp., Milwaukee. The secretary of the committee is H. L. Green, 1420 Illuminating building, Cleveland.

Formal announcement has been made by the officers of the American Tool Works Co., Cincinnati, relative to the occupancy of their new plant. The building has 240,000 square feet of floor space and is equipped with a forced-air heating and ventilating system.

Exempts Shipworkers From Draft

War Department Takes Sweeping Measure to Provide Sufficient Labor to Facilitate Rapid Construction of Vessels—Ruling is Aimed at Strikers—Must Build Ships or Fight in Trenches

WITH a view of facilitating the government's shipbuilding program, the war department this week exempted from military service all shipbuilders engaged in government work. This is the first class exemption made since the draft law was enacted, and it is believed that the step will go a long way toward meeting the labor demands of the shipbuilding companies. According to official estimates there is a shortage of at least 300,000 men, if the shipbuilding program is to be completed on schedule.

One specific aim of the war department in effecting this new ruling, is to do away with all strikes in the future. Under the final agreement between government officials, in charge of the shipbuilding program, and Maj. Gen. Crowder, provost marshal general, in charge of the administration of the draft, all shipbuilders going on strike will become immediately liable to draft, and instead of drawing $3.25 to $7.50 a day as a civilian employe, will become privates in the army at $30 a month. The plan, it is thought, will not only have a much more steadying influence on those already employed in the shipyards, but will cause thousands to offer their services, who would rather help build ships than fight in the trenches.

Put Check on Shipbuilders

A constant check is to be kept by the government to see that all shipbuilders, exempted from military service on account of their occupation, remain at work. No shipbuilders who have been drafted and are now serving in the camps will be released to return to their former occupations. Many shipbuilders were exempted in the first draft, but it was only after claims were filed either by the workmen themselves, or by their employers or relatives. In the future all filing of claims will be unnecessary.

In connection with this development in the administration of the draft, that Maj. Gen. Crowder has sent a questionnaire to the draft boards throughout the country, which will be distributed among the remaining 9,000,000 registered men in order to ascertain their liability to military service and their serviceability in war occupations. As announced several weeks ago, the registered men will be divided into five classes, according to the war department's view as to their disability for draft.

Milwaukee Plans to Stop Influx of Negro Labor

To stop the constantly growing influx of negro labor into Milwaukee and other industrial centers of the north, the Milwaukee council of defense has issued an appeal to all manufacturer of the city and vicinity asking for their co-operation in bringing about a readjustment of white labor, which is stated to be in ample supply if proper remedies are applied for its complete utilization to best advantage. The following statement issued by the Milwaukee defense council, department of manufactures, is in part:

"In response to letters written to many southern labor bureaus, this department has received answers from practically every southern state respecting the negro problem. Fifty thousand negroes have migrated to the north from the state of Texas alone and about one-half as many Mexicans have accepted jobs in the north. There seems to be no law in any of the southern states, which will control this exodus, although every effort is being made to discourage it.

"In the south the negro has his place in industrial life and there is no attempt made on the part of white or negro labor to supplant one another. Every effort should be made by manufacturers in the north to discourage the practice of bringing in negro labor. We have plenty of labor in Milwaukee county, but what is required is a readjustment. In response to letters sent to all of the manufacturers in the metal trades, asking whether they would co-operate with this department in bringing about such a readjustment, they have expressed their willingness to do everything in their power to aid this project."

Sheet and Tin Plate Men Get Wage Advance

As a result of the bi-monthly wage settlement in Youngstown, O., this week between representatives of the Amalgamated Association of Iron, Steel and Tin Workers and manufacturers subscribing to the Amalgamated wage agreement, sheet mill operators received an advance of 10½ per cent and tin mill workers, 12 per cent. The settlement was made on the basis of an average selling price of $5.35 for 26, 27 and 28 gage black sheets per 100 pounds and $8.35 a base box on tin plate as compared with $5 for sheets and $7.75 for tin plate the previous period. The new settlement prices are higher than those recently fixed by the government, which call for $5 on 28 gage black sheets and $7.75 on tin plate. Owing to the existence of contracts at prices higher than the government figure covering the output for several months to come, it likely will be some time until the bi-monthly examination of sales sheets discloses card rates approximating government prices for either sheets or tin plates.

Safety Code Retroactive

Thousands of dollars invested in safety appliances in Ohio industrial plants may be rendered futile because the proposed new general safety code for workshops and factories will be retroactive unless otherwise stated. The "otherwise stated" exceptions are in the minority. In the code, which is soon to be adopted by the Ohio industrial commission, minimum dimensions for railings, toe boards, floor and wall openings, elevated runways and platforms and sizes of guards for moving parts are fixed. It is probable that the commission will require every moving part, even down to stoker shafting, to be enclosed. Following the adoption of this code the state commission will turn its attention to writing codes for factory fire prevention and setting safety standards for railroad yards and equipment within industrial plants.

Frick Employes Advanced

Twenty thousand employes of the H. C. Frick Coke Co., Connellsville, Pa., have been granted a wage increase ranging from 10 to 20 per cent. This is the second increase given the Frick employes in two months and the sixth wage advance in two years.

William R. Brock, at one time president of the Canadian General Electric Co., died recently, aged 82 years.

Industries Pushing War Production

Large Ordnance Works Being Speedily Built—Sawmill Units Provided in Record Time—Big Arsenal in France is Awarded—Large Orders for Shell Forgings Are Placed—Truck Construction Speeded Up

REPORTS from industrial centers everywhere in the United States bear evidence of the same refreshing fact that American enterprise and genius are rising quickly to the Nation's call. Faster than believed possible manufacturing plants are being rearranged for the production of munitions and new works are springing up over night. Machinery that has never turned out anything more dangerous than parts for pleasure automobiles now is hard at work on aircraft engines. In different parts of the country private capital at the government's request continues to finance munitions projects and to erect new plants until the latter can assume ownership. Some manufacturers who have been considering procuring machinery from Canadian munition plants that have been permitted to become idle through increased production in England have not been able to carry out these plans since such exportations have been forbidden by the Canadian government. There is talk that up to 40 per cent of the capacity of the automobile factories of the country will be diverted into war channels. Already, the Nash, Ford, Packard, Locomobile, Premier, Maxwell, Studebaker, Willys-Overland and General Motors plants are working on government orders.

To Erect Ordnance Plant

George A. Steinle and associates in the Steinle Turret Machine Co., Madison, Wis., have responded to the request of the United States government to finance a naval ordnance manufacturing plant until the latter is enabled to take it over, and they will establish in Madison a complete new shop involving an investment of between $750,000 and $1,000,000. The Four Lakes Ordnance Co. accordingly has been organized with a capital stock of $100,000 and has awarded the contract for the erection of its new plant to the Austin Co., Cleveland. The main building will be 150 x 500 feet in size and adjoins the plant of the Steinle Turret Machine Co. Contracts call for the completion of the shop by Jan. 1. The Steinle project is the third to be undertaken by Wisconsin capital. The first is the Wisconsin Gun Co., Milwaukee, which practically has completed a new plant to build 1000 field pieces of the 3-inch, 1916 model, the carriages for which will be furnished by the government through the Rock Island arsenal. The second is the Northwestern Ordnance Co. of Madison, which expects to start the manufacture of 4.7-inch field pieces about Nov. 15 or Dec. 1. The Milwaukee project is financed by five large manufacturing concerns and the Madison plant by interests affiliated with the Gisholt Machine Co.

Builds Saw Mills Speedily

Ten complete sawmill units, manufactured in record-breaking time by the McDonough Mfg. Co., Eau Claire, Wis., for the government, have just been loaded on a special train and shipped to the Atlantic seaboard for delivery to the American expeditionary forces in France. The McDonough company received the order on Sept. 8, delivery of the ten units being specified at 60 days. Ordinarily ten mills of this size would represent nearly a full year's output of the Eau Claire plant, but by a supreme effort of the entire working force, it was possible to complete the contract and ship the mills in 55 days. Each of the ten mills is completely equipped with carriages, circular saws, feed works, edgers, cut-off saws, live rollers and all driving and transmission machinery. The production of all parts and the assembling work was done under the direction of a government inspector.

The Stone & Webster Engineering Corp. has been given the contract for the construction of a tremendous ordnance depot and arsenal of issue and repair in France, on a cost plus 10 per cent basis. The total cost, including the equipment, is estimated at not less than $100,000,000. The contract came to this country, because if placed with French companies, it would have meant the taking of so much support from the front. All raw materials and machines will be sent from this country and 10,000 Americans have been enlisted for the work.

The Aluminum Goods Mfg. Co., Manitowoc and Two Rivers, Wis., has completed a government contract for 1,500,000 aluminum canteens for the army and expects to receive specifications for a second order of similar dimensions.

Dodge Bros., Detroit motor car builders, have broken ground at Detroit for the erection of an ordnance plant on a 40-acre site. A contract for $30,000,000 of government work has just been closed and it is understood that a much larger order from the British government is pending. John H. and Horace E. Dodge are financing the undertaking, relieving a syndicate of bankers and manufacturers who had planned to use the new plant of the Saxon Motor Co. in handling the order. The Saxon company plans to complete its building for its own use.

The Traylor Engineering & Mfg. Co., Allentown, Pa., has completed plans for the construction at its Allentown, Pa., plant, of marine engines and boilers for the 10 wooden ships which are to be built for the government b ythe Taylor Shipbuilding Co., at Cornwells, Pa. The keel of the first boat will be laid within a month and it is expected to be launched not later than Feb. 1.

Scranton Firm to Make Engines

The Scranton Foundry & Engine Works, which occupies the plant at Scranton, Pa., formerly used by the Toubill Iron Works, has taken a contract to build engines for merchant vessels to be constructed for the Emergency Fleet Corp. The initial contract calls for 20 engines. J. O'Shaughnessy, New York, is president, and Canfield Rousseau is superintendent.

The Smith Foundry & Machine Works, Manitowoc, Wis., has taken a large contract for heavy and light iron and steel work for the Manitowoc Shipbuilding Co., which is engaged in building steel ships for the government. No additions are being made but some new equipment is being purchased.

The Twin City Forge & Foundry Co., Stillwater, Minn., has been given a contract for $3,000,000 worth of 6-inch shells, according to an announcement by George H. Atwood, president.

The Curtis & Co. Mfg. Co., St. Louis, which discontinued making shells about three months ago, will resume their manufacture within the next few days. The company, which filled an English and Russian contract, has rebuilt its machines to handle an order from the United States government. Four cars of shell steel have been delivered at the plant.

Iron and Steel Financial News

Up-to-the-Minute Fact and Comment Collected and Sifted For Busy Readers

War's Developments Upset Stock Values

MUCH attention has lately been given to the movements of the various financial markets, on the assumption that they might afford some index of the results of the Russian debacle and the Italian defeat. Undoubtedly the financial markets are again beginning to be dominated by the military and political developments of the war for every bit of news adverse to the allies may mean the extension of the war for months or years, with consequently increased financial and economic burden for this country. Prospects for increased indebtedness and heavier taxation to come cause stocks to slump, even though enacted tax laws may be followed out by some firms with comparative ease. The New York stock market dropped violently on Monday a week ago, stocks dropping three to seven points, when news came that Cadorna had been dislodged from his new position on the Tagliamento. Then on Thursday there was another sharp decline, when the cables arrived, telling of the sudden seizure of the Russian government by the Bolsheviki. Both Russian and Italian exchange have reflected the bad news. New York exchange on Rome sold down to 8.62½ lire to the dollar last week, par being slightly over 5 lire. New York exchange on Petrograd sold down to 11½ cents to the ruble, a depreciation of nearly 80 per cent from the ruble's parity of 51½. If Kerensky and his followers are able to regain control an upward reaction in rubles will likely follow, as the recent spectacle of Lenine and his party in supreme command is about the worst condition that could exist, to the eyes of the financial markets. If, on the other hand, the Bolsheviki were able to accomplish a separate peace, it is probable that New York exchange on Petrograd would approach zero.

The steel stocks have suffered as much or more than any other class of securities in the recent sharp declines on the stock exchanges. Just why the steel stocks have been singled out in this way no one seems able to say, least of all the heads of the various steel companies themselves, for mills and furnaces continue active, books are filled well ahead and earnings are high. On Oct. 18 a table was printed in these columns, showing the sharp declines in stock prices which our entrance into the war had caused among the steel stocks. This list of representative stocks below is published again, with the number of points lost per share, for the declines since that date have been remarkably extensive:

	Low last week	High for year	Total decrease
Beth. B.	72½	155½	83
Col. F. & I.	29¾	58	28¼
Cruc. Steel	49½	91⅞	42⅜
Gulf States	77	137	60
Lack. Steel	68	103⅞	35⅞
Rep. I. & S.	66¼	94½	28¼
Sloss-Shef.	33½	74¾	41¼
Midvale Steel	39⅞	67½	27⅝
U. S. Steel	88¾	136⅝	47⅞

Midvale Steel & Ordnance Rearranges Subsidiaries

William E. Corey has become chairman of the board of the Midvale Steel & Ordnance Co. and Alva C. Dinkey, formerly vice president, succeeds him as president, in a rearrangement which just has been completed. This rearrangement includes the abandonment of the identity of three of its subsidiaries, the Midvale Steel Co., the Worth Bros. Co. and the Wilmington Steel Co. These properties hereafter will be known as the Nicetown works, the Coatesville works and the Wilmington works, respectively, of the Midvale Steel & Ordnance Co. This action was made possible by the purchase recently of a few outstanding shares of the Midvale Steel Co. which formed the nucleus of the larger organization in October, 1915. The Cambria Steel Co. will maintain its name and organization; not only is a certain amount of the stock of this company still in the hands of the public, but an old lease signed many years ago contains the stipulation that the name "Cambria" is to be preserved for 999 years. Cambria, therefore, will remain a separate organization in name, although its business will continue to be controlled by the Midvale Steel & Ordnance Co. Officers elected by the Midvale Steel & Ordnance Co. most of whom have held a similar position with the Midvale Steel Co., are: Chairman of the board, W. E. Corey; president, A. C. Dinkey; vice president, William B. Dickson; vice president in charge of operations, Edwin E. Slick; vice president in charge of sales, John C. Neale; assistant to president, H. S. Black; treasurer, D. B. Gehl; secretary, Robert Brewster; controller, Marshall Lapham; auditor, James M. Milliken; assistant treasurers, Joseph Hill and L. K. Krause; assistant secretaries, T. B. Burtis and W. A. Martin; purchasing manager, S. C. Yeates, and traffic manager, H. C. Crawford. Ambrose Monell has resigned as director, having accepted a commission in the United States army. Joseph W. Harriman, president of the Harriman National bank, and Herbert F. Black, now in charge of raw materials, were elected directors to fill the vacancies.

The financial report for the third quarter ending Sept. 30 compared with previous quarters as follows:

Quar. end.:	Sept. 30, 1917	June 30, 1917	Mar. 31, 1917
Net earn...	$18,045,082	$18,966,135	$15,859,738
Res. for Fed. taxes	7,817,964	8,132,591	6,189,027
Int. chgs..	805,685	816,521	814,456
Dep. chgs..	1,382,148	1,758,233	1,800,864
Net profit	$8,039,285	$8,258,790	$7,055,391

Charcoal Iron Sells Big Lots of Yale Ore

The Charcoal Iron Co. of America has closed contracts with two steel companies for the delivery of 2,000,000 tons of high grade iron ore from its Yale mine, over a period of 10 years. This announcement was contained in President Frank W. Blair's report of the company's operations for the third quarter ending Sept. 30 in explanation of large expenditures which

have been made on the mine property. Unfilled orders of Charcoal Iron Co. on Sept. 30 for delivery during the remainder of 1917 amounted to 37,567 tons at an average selling price of $29.15 a ton at the furnace. In addition, orders for 46,524 tons for delivery in 1918, at an average of $42.55, have been booked.

Net income for the three months ending Sept. 30 was $398,412, after deducting interest charges. Net profits for the first nine months of the year were $1,278,312, leaving a balance of $1,736,931 in surplus after deducting dividends amounting to $554,733. On Sept. 30 total assets were $11,543,854, with current assets of $1,942,497 and net working capital of $1,037,973. Fixed assets of $9,559,376 include $504,968, expended on new construction and additions to plants. Inventories total $1,522,883. Reserves at the end of the last quarter were $361,699.

Allis-Chalmers Has Small Decline in Earnings

The net earnings of the Allis-Chalmers Mfg. Co., Milwaukee, for the third quarter declined about $100,000, the total aggregating about $919,404, as compared with $1,002,455 in the preceding quarter. Despite this small drop, however, the earnings were regarded as encouraging in view of the rapidly advancing cost of labor and materials.

The aggregate net profits for the nine months of this year amounted to $2,822,531, or an increase of 26.2 per cent over the corresponding period of 1916. Total sales for the three quarters of this year were $17,912,275, as compared with $13,698,830 for the first nine months of 1916, and $6,415,527 for the entire 12 months of 1915. Sales for the quarter just ended amounted to $6,287,065. The company on Sept. 30 had unfilled orders on its books aggregating $17,306,433, or about $1,000,000 more than at the end of the preceding quarter.

Arrange Chain Merger

A merger of the Columbus Chain Co. of Columbus, O., and Lebanon, Pa., and the McKinnon Chain Co. of Buffalo, No. Y., and St. Catharines, Ont., which is now in progress, will make the Columbus-McKinnon Chain Co. the largest concern of the kind in the world. The McKinnon stockholders already have ratified the merger and the stockholders of the Columbus Co. yesterday met to ratify the action of their board. The Columbus McKinnon Chain Co. will be an Ohio corporation with a capital stock of $2,500,000, and the general offices will be in Columbus.

Affairs of Ex-Governor Foss in Trusteeship

Ex-Gov. Eugene Noble Foss, of Massachusetts, president of the Sturtevant Blower Co., Mead-Morrison Mfg. Co., and the Maverick Mills, Boston, formerly president of the Becker Milling Machine Co., Hyde Park, Mass., and financially interested in several other large corporations, has made a voluntary assignment to Galen L. Stone, of Hayden, Stone & Co., William A. Gaston, retiring president of the National Shawmut bank, and Neal Rantoul, of F. S. Moseley & Co., prominent Boston bankers. His heavy stock holdings in a rapidly falling market has caused the former governor to take this step in order to protect his manufacturing interests. Two of the stocks in which he had heavy holdings, Boston Elevated and Massachusetts Electric, struck the lowest quotations in history on the day of the assignment. The act was, in effect, according to the committee of three, the creation of a trusteeship which makes possible the pooling of Mr. Foss' interests for all creditors. No official estimate of the assets and liabilities has been given out, but it was said that the assets probably will exceed the liabilities by several millions. Vice President W. S. Martin, of the Mead-Morrison Mfg. Co., says Mr. Foss has always been a minority stockholder in the company and its affairs were never so prosperous as they are today, it having unfilled orders on its books for approximately $12,000,000.

Bridgeport Projectile Co. Passes to New Owners

The Liberty Ordnance Co., Bridgeport, Conn., recently incorporated with $4,500,000 capital, has taken over the Bridgeport Projectile Co., which was organized at the outbreak of the war by German capital. Kenneth W. McNeil, president of the company in outlining its future policy said: "Liberty Ordnance Co. has taken possession of the entire plant, equipment, etc., of the Bridgeport Projectile Co., and it is the purpose of the new company to offer the entire output and production of the company to the American government and its allies." It will produce for the United States government 12,000,000 shells and 300 navy guns per year. The Bridgeport Projectile Co., in April, 1915, received an order from the German government for 2,000,000 shrapnel casings at a cost of $5,000,000, $2,000,000 of which amount was advanced through Carl Heynan, the Kaiser's special representative in America as an evidence of good faith. Heynan has since fled the country.

Gross Sales of Pittsburgh Rolls Corp. Run Large

Gross sales of the Pittsburgh Rolls Corp. for the four months ended Sept. 30 amounted to $479,476, while the net sales aggregated $441,661. The company's net profits for the period totaled only $97,818, but this was owing to heavy deductions for selling expenses and administrative costs, including excess and income profits taxes. Other income, however, not specified, brought the gross income up to $112,618. The Pittsburgh corporation recently took over the Semen-Sleeth Co. properties.

Foundries Profits Jump

An increase in the net profits of nearly 100 per cent is shown in the report of the American Steel Foundries for the nine months ended Sept. 30. These aggregated $4,120,096, as against $2,156,410 in 1916. The operating revenue during the period increased about $3,700,000, or 140 per cent. A gain also was shown in the surplus, which was $3,686,786, compared with $1,744,130 in the previous year. The report estimates the excess profits and income tax at $1,500,000.

Following is a comparative statement:

	1917	1916
Operating revenues ...	$6,377,502	$2,643,680
Depcn. charges	808,591	378,066
Net earnings	5,568,991	2,265,614
Total income	5,783,826	2,353,087
Bal. after int. charges.	5,620,096	2,156,410
Excess profits and inc.	1,500,000	.....
Net profits	4,120,096	2,156,410
Surplus	3,686,786	1,744,130

To Increase Stock

A proposal to increase the common stock of the Hydraulic Pressed Steel Co., Cleveland, from $4,500,000 to $6,000,000 will be voted at a special meeting to be held Dec. 10. President James H. Foster, in a letter to stockholders, states that the directors have authorized the acquisition of all the common stock of the Canton Sheet Steel Co., Canton, O., part of which has already been obtained and paid for in cash. The remainder of the stock, according to the letter, must be paid for with the common stock of the Hydraulic company, or if Hydraulic's stock be not increased, then in cash. Only $400,000, of the proposed issue of $1,500,000 common stock, however, will be used to carry out the plan for acquisition of the Canton company.

Names Committee of Crane Builders

War Industries Board Establishes New Division to Settle Conflicts Arising From Enormous Requirements—Government Assistance is Advocated as Machine Tool Situation Grows More Complicated

LOCOMOTIVE cranes have been added to the government's "short list". In other words, they are now officially considered among the list of commodities of which the demand exceeds the supply. A locomotive crane division of the war industries board has been formed, and a committee named comprised of representatives of several leading locomotive crane builders. A man will be selected this week to take charge of the division. Work will be started immediately to compile statistics of the industry. Because of the deferred deliveries, locomotive cranes are being rented, in some cases, at rates ranging from $750 to $1000 a month. Another big factor in the market, just now coming under consideration, is the proposed creation of government terminal facilities at Atlantic ports. The government has just awarded general contracts for such facilities, to cost $18,000,000, along the Raritan river in New Jersey, in the vicinity of Norfolk, Va., and in Curtiss bay, Baltimore, to Smith, Houser & McIsaac, to the Snare & Treist Co., and to James Stewart & Co., respectively, all of New York. The Stone & Webster Engineering Corp., Boston, is in the market for four 20-ton locomotive cranes for the Watertown arsenal. The Submarine Boat Corp. has closed for two 35-ton locomotive cranes for its new shipyard in Newark bay, with the Ohio Locomotive Crane Co., Bucyrus, O., in addition to the seven it recently placed with that company.

Traveling Crane Requirements Grow

Considerable new inquiry for electric traveling cranes also has come out the past week. The William Cramp & Son's Ship & Engine Building Co., Philadelphia, has issued a list of six electric cranes. The Baldwin Locomotive Works has issued a list of 24 electric traveling cranes, of the following capacities: Four 150-ton, four 100-ton, two 70-ton, four 50-ton and eight 20-ton cranes. The Brooklyn navy yard is contemplating a purchase of cranes. The Fore River Shipbuilding Corp. has closed for four additional electric traveling cranes for the government destroyer plant at Squantum, Mass., with the Champion Engineering Works, Kenton, O. The following lists are still pending: Forty-six electric traveling cranes inquired for by the Stone & Webster Engineering Corp. for the Watertown arsenal; seven electric cranes, 45 electric hoists and 40 jib cranes for the new shipyard of the American International Shipbuilding Corp. at Hog Island, Pa.; and 10 electric traveling cranes for the Federal Shipbuilding Co.

Assert Tool Builders Need Government Aid

The shortage of machine tools steadily is becoming felt more deeply. Leading builders assert that government assistance offers the only solution of the problem. Fully 95 per cent of the tools now being turned out are for use in direct connection with government work. The situation is growing worse and in some quarters it is feared that lack of necessary tools will seriously interfere with the progress of some of the government's war preparations, unless immediate steps are taken to relieve the scarcity. To this end it is urged that the government lend financial assistance to machinery builders. It is also pointed out that it is unwise to distribute ordnance contracts among various machine tool and crane builders. The opinion is further expressed that machinery builders should concentrate upon a few special lines each, to develop an output as large as possible.

Available Shell Machinery Supply Dwindles

Heavy buying of shell machinery for plants which recently have been awarded government munition contracts has about exhausted the supply of "single purpose" lathes and similar tools which for months had been lagging behind the rest of the market. The Minneapolis Steel & Machinery Co., Minneapolis, Minn., which recently bought about $2,000,000 worth of machine tools against a $16,000,000 ordnance contract, has been buying additional machine tools against new shell orders. The Baldwin Locomotive Works is buying tools for its Eddystone plant against recent shell contracts. The American Car & Foundry Co. and the American Brake Shoe & Foundry Co. are reported to have shared in the recent letting of shell orders. The Scovill Mfg. Co., Waterbury, Conn., has been buying machinery against a fuse contract. An immense amount of buying for other government work is impending. The ordnance base depot in France still requires much equipment. The Fore River Shipbuilding Corp. will require between $15,000,000 and $20,000,000 worth of tools for the new government destroyer engine and boiler plants at Providence, R. I., and Buffalo. The Falk Mfg. Co., Milwaukee, is building an $800,000 addition to handle a contract for 182 sets of turbine drives for destroyers. The Pacific Coast Shipbuilding Co., San Francisco, which has received a cargo ship contract from the Emergency Fleet corporation, is inquiring for shipyard equipment.

Chicago Dealers Receive Large Inquiries

MACHINE tool dealers in Chicago are feeling more strongly the demand for equipment made by makers of ordnance and munitions. Orders were placed recently for about $300,000 worth of equipment, consisting principally of lathes for the Rock Island arsenal. Letters have been received by all dealers from the military truck production department of the quartermaster general's office, asking for a complete list of all new and used machinery owned by the dealers and also of any equipment known to be for sale. George H. Atwood, president of the Twin City Forge & Foundry Co., Stillwater, Minn., announces that his company has a contract for $3,000,000 worth of 6-inch shells. The Four Lakes Ordnance Co., Madison, Wis., has been organized by officers of the Steinle Turret Machine Co. and will build and equip a plant for the production of naval ordnance. Inquiries are out for drills and planers for this plant. The Standard Steel Car Works at Hammond, Ind., is making large extensions to its machine shop and is asking for considerable equipment.

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Say you saw it in THE IRON TRADE REVIEW

Deliveries are becoming more deferred and in many instances the best that can be promised are July or August, 1918. Available second hand machines are now held at higher prices than new tools, delivery being worth more than a new machine. The Union Pacific railroad is about to build a machine shop at Council Bluffs. The Sioux City Welding & Machine Works is building a welding plant and machine shop. The Novo Engine Co., Lansing, Mich., is building a foundry and machine shop. The Keith Railway Equipment Co. is starting work on a plant at Chicago. The United Switch Co., Eau Claire, Wis., is building a drop forge shop. The Electric Machinery Co., Minneapolis, is in the market for boring mills, lathes and other machinery and a 25-ton crane with a 60-foot span.

Government Orders Fill Market

RANGE orders being placed by the government continue to characterize the machinery and machine tool market in the Pittsburgh district. Plants of various descriptions in this district are being equipped with war-making machinery on a vast scale. Domestic inquiry for machine tools is comparatively quiet. Buyers are withholding purchases, partly because of high prices prevailing and also because of the uncertainty of deliveries, which in any event would be greatly deferred. Prices remain unchanged, although it is considered not to be improbable that revisions may be brought about as a result of the reduced levels established on steel products by the government.

Tool Dealers Await Further Developments

MACHINE tool dealers in the Cleveland district are experiencing a respite from the large inquiries that have been occupying the market for some time past. The past week has brought out a fair number of inquiries; but these for the most part have been scattered and for a small number of machines. A contract lately has been closed by the American Clay Machinery Co., Bucyrus, O., with the Cleveland Tool & Supply Co., Cleveland, for 50 21-inch lathes. The Elyria Machine Co., Elyria, O., also has contracted for 20 lathes of the same type with the latter company. The Greer Steel Co., Dover, O., has issued an inquiry for a planer, to be either of the standard or open-side type and 36 x 36 inches x 12 feet size or larger. The Schlieper Engineering Co., Pittsburgh, is in the market for a traveling crane, to have a capacity of 50 tons and a span of 61 feet. Requests for prices on an open-side planer, 36 x 36 inches x 10 feet and a 72-inch variable speed, plain radial drill have been made by the Wheeling Mold & Foundry Co., Wheeling, W. Va. A few small tools, it is understood, are required by the Wellman-Seaver-Morgan Co., Cleveland. The George H. Scott Machine Co., Cleveland, has started construction work on its new plant. Additional land has been purchased by the Timken Roller Bearing Co., Canton, O., adjoining its present plant. The company will erect an addition to its plant.

Receive Many War Contracts

VAST changes may be caused by the prospective conversion of motor car manufacturing equipment in Detroit and contiguous territory to the production of war materials; a step which, it is said may be undertaken under government supervision. In the event that this change is made in several large plants, the Detroit machine tool trade will come to be of unusual importance. Representatives of industries in the state having invested capital of $750,000,000 met in Detroit, Saturday, and completed plans for increasing the production to aid the government in its war program. Negotiations now are under way by the National Machinery & Supply Co., Hamilton, Ont., furthering the establishment of a plant either in Michigan or Ohio.

New Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Factories

NEWPORT, VT. — Prouty & Miller are building a 40 x 72-foot addition to their planing mill and a 2-story, 20 x 25-foot engine house.

BOSTON.—R. Estabrook's Sons will build a brick, 2-story, 33 x 36-foot storage building on West First street, South Boston.

BOSTON.—The Trimont Mfg. Co. has let the contract for a brick, 2-story, 45 x 85-foot addition to its factory at 61 Amory street, Roxbury, Mass.

BOSTON.—Charles A. Jackson, Inc., has been chartered to make machinery, electrical appliances, etc., with $10,000 capital by M. A. Harper, Charles A. Jackson, Newton, Mass., and William L. Howard.

BOSTON.—The V. Neilson Co. has been incorporated with $10,000 capital to manufacture machinery by Andrew Kaufmann, V. A. Neilson and V. A. Charles.

BOSTON. — The Marine Engineering Co. has been incorporated with $40,000 capital by Frank G. Crowley, Fred W. Brigham and Walter Kilvert of Lynn, Mass.

CHELSEA, MASS.—John M. Carrecabe is building a brick, 3-story, factory to cost $50,000 on Fourth street.

EVERETT, MASS.—The plant of the Barrett Mfg. Co. was damaged by fire and explosion, Oct. 30.

WESTFIELD, MASS.—The Brian Heater Co. will build a 2-story factory and storehouse 50 x 100 feet in size to cost $18,000.

WORCESTER, MASS.—The Antrim Safety Lock Co., Inc., has been incorporated to make safety locks with $30,000 capital by Raymond B. Fletcher, Shrewsbury, Mass., Robert W. Jameson and Howard W. Cowee.

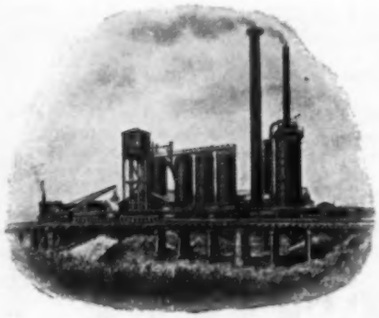
WORCESTER, MASS.—The Spencer Wire Co. is building a brick, mill construction, 2-story, 51 x 60-foot addition to its factory on Webster court.

WORCESTER, MASS. — The foundry of the Wyman-Gordon Co. was damaged by fire Oct. 30.

BRISTOL, R. I.—The Lynn Rubber Mfg. Co., Lynn., Mass., will build a 2-story factory and remove its plant.

EAST PROVIDENCE, R. I.—The Gorham Mfg. Co. will build a munitions plant to cost $150,000.

HARTFORD, CONN.—The Colt's Patent Fire Arms Mfg. Co. has let the contract for a 1-story, 50 x 250-foot mill construction build-



DELAWARE RIVER STEEL COMPANY

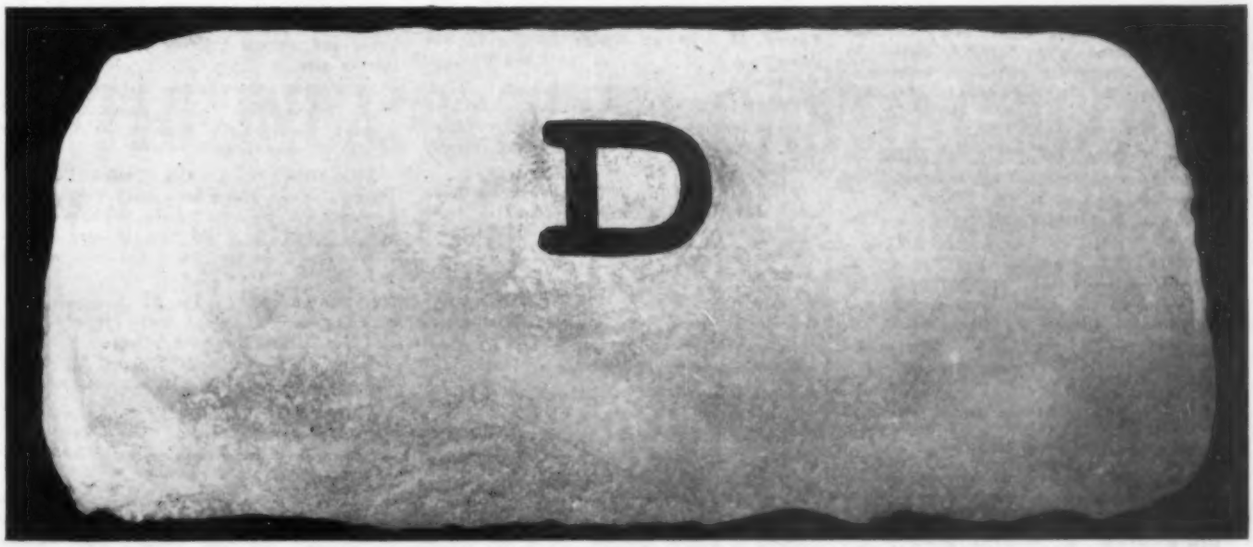
MANUFACTURERS OF PIG IRON

CHESTER, PENNSYLVANIA

PIG IRON?

100 WORDS

A Double NIGHT LETTER to Pig Iron Consumers. We have engaged this space to place before you the merits of "DELAWARE" Pig Iron. We have selected this publication on account of our confidence in its management. The Iron Trade Review reaches you, so will our message. We expect to alternate with "Rolling Mill Jim" and we are proud of our associate. No doubt you missed him today but you have found us. In future numbers we shall tell you of our pig iron, its manufacture, our plant, our methods and our ambitions. Always one hundred words. No more. Count them.



Say you saw it in THE IRON TRADE REVIEW

ing, to be used for a testing and inspecting plant.

NEW LONDON, CONN.—The government has awarded the general contract for a machine shop and three ordnance storage buildings to cost $113,000 to the E. H. Arnold Co., 629 Woodward building, Washington.

NEW LONDON, CONN. — Bigelow & Nichols, New York, have received a contract from the government for a steel, concrete and brick, 2-story, 95 x 250-foot power house and machine shop for the naval submarine base. The cost will be $200,000.

NORWICH, CONN. — Wellman Bros., Pittsburgh, makers of light hardware contemplate acquiring a site and removing their plant.

STRATFORD, CONN.—The Royal Equipment Co. has awarded the general contract for a 1-story plant, 90 x 180 feet, to cost $50,000.

WATERBURY, CONN.—The Housatonick Power Co. has let the general contract for a power house 1-story high and 61 x 97 feet in size to cost $40,000.

Along the Middle Atlantic Seaboard

BROOKLYN, N. Y. — The Globe Auto Radiator Mfg. Co. has been incorporated by H. Kaplan, A. and B. Greenblatt, 1766 Union street.

BUFFALO.—The Volz-Guild Co. has been organized to manufacture iron and steel rails and tools by G. Volz, R. C. Guild and W. H. Means. The company is capitalized at $50,000.

BUFFALO.—The Stewart Motor Co., 413 East Delavan street, will build an assembly and storage building 1-story high and 60 x 100 feet in size, to cost $7500.

BUFFALO, N. Y.—The Oneil Iron Works has been incorporated with $400,000 capital to manufacture sugar mills by J. M. Hull, W. D. and L. W. Oneil.

BUFFALO, N. Y.—The Empire Engineering Co. has filed plans for a power plant at the foot of South Michigan street. The cost will be about $10,000.

BUFFALO.—The Buffalo Structural Steel Co., 166 Dart street, has awarded the general contract for a 1-story shop, 48 x 122 x 42 feet, to cost $24,000.

ELMIRA, N. Y.—The Willys-Morrow Co. will build a 2-story nickel plating building 90 x 150 feet in size to cost $40,000.

FULTON, N. Y.—Plans are being drawn for a steel casting plant to cost $60,000 for the Fulton Steel Corp.

NEW YORK.—The Standard Aircraft Corp. has been incorporated with a capital of $5,000,000 to manufacture airplanes by H. B. Windle, C. H. Day, D. L. Meehan Jr., 36 West Eighty-eighth street, and others.

NEW YORK.—The Symington Forge Co. has been organized by R. J. Scully, L. Church and W. J. Flannagan, 1484 St. Nicholas avenue.

NEW YORK.—The Otter Mfg. Co. has been incorporated with $100,000 capital to manufacture automobile parts and accessories by S. Otter, M. M. Otter and L. May, 867 Kelly street.

NEW YORK.—The Associated Steel Corp. has been chartered with $50,000 capital to manufacture iron, steel and other metals. The incorporators include M. F. Walser, R. T. Kahl and A. M. Garbade, 206 Howard avenue, Brooklyn.

NEW YORK.—The Stoddard Union Co. has been chartered with $100,000 capital to build a foundry for making steel castings and pipe fittings. The incorporators include E. O. Aspein, A. Hild and F. B. Potterton, 18 Cliff street.

NIAGARA FALLS, N. Y.—The Kellogg Products Co. has drawn plans for a 1-story power house.

ROCHESTER, N. Y. — The Symington-Anderson Corp., 25 Leighton avenue, has let the general contract for four factory buildings to the Crowell-Lundoff-Little Co., Cleveland.

ROCHESTER, N. Y.—The Farmers Machine & Chemical Co. has been chartered with $100,000 capital by W. S. McKinney, J. N. Marshall, S. G. H. Covell and others.

YONKERS, N. Y.—The H. Schneider Co. will build two factory buildings to be 2 stories high, 30 x 152 and 50 x 86 feet in size, to cost $40,000.

EDDYSTONE, PA. — The F. W. Mark Construction Co., Philadelphia, has been awarded a contract to build a large erecting shop for the Baldwin Locomotive Works.

HAZLETON, PA.—The Weatherly Foundry & Machine Co. will erect a power plant.

HAZELTON, PA.—The Worthington Pump & Machinery Corp. will build a machine shop 1-story high and 200 x 240 feet in size, to cost $150,000.

PITTSBURGH.—The Keystone Bronze Co. has bought 178 feet of frontage adjoining its plant on Thirty-ninth street; and contemplates erecting a plant addition.

PITTSBURGH. — Damage estimated at $4000 was caused by a fire on Nov. 4, at the Singer mill of the Crucible Steel Co. of America.

PITTSBURGH.—The Turner Construction Co., New York, has received a contract for the erection of a 7-story, 62 x 185-foot reinforced concrete factory for the Pennsylvania Chocolate Co., College avenue. Ballinger & Perret are the architects.

PHILADELPHIA.—The Ford Chain Block Co. will build a 1-story shop to cost $8000.

PHILADELPHIA.—Construction work has started on a 83 x 129 freight house addition for the Philadelphia & Reading railroad. A. L. Carhart is the contractor.

PHILADELPHIA.—The contract has been let to Stewart Bros. for the erection of a 1-story, 35 x 84-foot storage building for the Allen Iron & Steel Co., at Third and Venango streets.

PHILADELPHIA. — A permit has been granted for repairing the J. McCaffrey foundry, 1624 South Eighteenth street, recently damaged by fire.

PHILADELPHIA.—The Atlantic Refining Co., 3144 Passyunk avenue, plans to build an 82 x 84-foot power house at Passyunk avenue and Twenty-eighth street. The cost is estimated at $50,000.

PHILADELPHIA. — The Harrison Safety Boiler Co., Seventeenth street and Allegheny avenue, has let a contract to Stewart Bros. for the erection of a foundry addition.

PHILADELPHIA. — Andrew J. Saner & Co., architects, have let a contract to Dan J. McNamee for the erection of a 1-story, 47 x 80-foot foundry addition at Third street and Allegheny avenue.

PHILADELPHIA. — A. J. Sauer & Co. have been awarded the contract for the erection of a 1-story addition, 35 x 100 feet in size, to the mill of Murphy Bros., Thirtieth and Reed streets.

PHILADELPHIA.—A contract has been let to the F. W. Mark Construction Co., Finance building, for the erection of an open-hearth building, a forge shop, heat-treating shop, machine shop and crane runway for the Tacony Ordnance Corp., Bleigh and Milnor streets.

PHILADELPHIA. — A contract has been let to George S. Roe, for the erection of a 1-story, 32 x 32-foot machine shop at Seventy-second and Yocum streets, for William B. Chambers.

PHILADELPHIA.—Lefever & Salmon have been awarded the contract for the erection of an addition to the plant of the General Repair Mfg. Co.

PHILADELPHIA.—Bids are being taken on the contract for erecting a factory addition to the plant of the Tioga Machine Co. at Twenty-third and Tioga streets.

READING, PA.—The Philadelphia & Reading railroad has awarded a contract to Henry E. Eaton, Philadelphia, to build a 15-stall, 1-story engine house. The building will be of reinforced concrete and 110 x 418 feet in size.

SOUTH BETHLEHEM, PA.—Schwalb & Miller will build a 3-story plant, 40 x 60 feet to cost $10,000.

CAMDEN, N. J.—The New York Shipbuilding Co. has purchased a site on Newton creek and will erect a 150-foot extension to its machine shop and other additions.

NEWARK, N. J.—The Newark Gear Cutting Machine Co. contemplates building a machine shop addition.

NEWARK, N. J.—The Miner-Edgar Co. have let the contract for a 4-story power house and storage building to be 70 x 163 feet in size.

NEWARK, N. J.—The A. W. Wheaton Brass Works, 112 Walnut street, will erect a brick, 1-story brass foundry, 33 x 50 feet in size, to cost $4000.

NEWARK, N. J.—The United Color & Pigment Co., Evergreen and Pennsylvania avenues, will build a 1-story brick and steel power house, 46 x 90 feet in size and a 3-story brick factory, 70 x 200 feet, to cost $65,000.

NEWARK, N. J.—The E. J. Kerns Mfg. Co. has been chartered with $50,000 capital to manufacture airplanes. James F. Kelly, Francis J. Kerns and Edward J. Kerns, Worcester, Mass., are the incorporators.

PATERSON, N. J.—The American Shell Co., Twenty-first avenue and Thirty-sixth street, will build a 1-story mill building to cost $15,300.

RAHWAY, N. J.—The Atlas Welding Co. has been incorporated with $50,000 capital to manufacture acetylene cutting and welding

On account of having largely increased the capacity of
our plant for the next 12 months we have the following

OPEN TONNAGE

FOR IMMEDIATE SHIPMENT

2500 TONS ANNEALED STEEL

3000 TONS MALLEABLE IRON

We want to contract this extra capacity.

Send us your requirements and specifications for prices.

Our STEEL has tensile strength of 80,000 lbs., is true to pattern and free from blow holes and it machines as well as a drop forging.

Our MALLEABLE has tensile strength of 45,000 lbs. to 53,000 lbs. and is thoroughly annealed.

THE INLAND STEEL CASTINGS CO.

Annealed Steel and Malleable Castings

TERRE HAUTE, IND.

New York Sales Office
MURCOTT & CO.
253 Broadway

Detroit Sales Office
GENERAL CASTINGS CO.
326 Ford Bldg.

Pittsburg Sales Office
RELIANCE MACHINERY CO.
207-8 Fulton Bldg.

Los Angeles Sales Office
ALLAN WETMORE
702 Spring St.

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equipment. John Grous and Charles Ackerman, Brooklyn, N. Y., are the incorporators.

IRVINGTON, N. J.—The Irvington Mfg. Co. will erect a 1-story factory to cost $8000.

TRENTON, N. J.—The state board of commerce and navigation contemplates the erection of a shipping terminal on the Raritan river, near South Amboy, and one on Newark Bay. J. Spencer Smith, state house, is in charge.

WASHINGTON, N. J.—Bids are being taken on a 5-story, 162 x 502-foot machine shop to be erected by the government.

DOVER, DEL.—The Verilite Metals Co. has been organized with a capital of $1,000,000 to manufacture aluminum products, by F. R. Hansell, J. Vernon Pimm and S. C. Seymour, Camden, N. J.

BALTIMORE.—The Bartlett-Hayward Co., Scott and McHenry streets, will erect a 114 x 182-foot steel and concrete machine shop on Ramsay street. Morrow Bros., Fidelity building, are the engineers.

BALTIMORE.—The Baltimore Dry Docks & Shipbuilding Co. will build a 1-story, 57 x 69-foot boiler house, a pump house and other extensions to its plant.

BALTIMORE.—The American Propeller & Mfg. Co. will build an aeroplane plant 1-story high and 150 x 200 feet in size, to cost $60,000. J. M. Creamer, 332 East Hamburg street, has charge.

BALTIMORE. — The Chesapeake Iron Works will build a 1-story erecting shop 40 x 210 feet in size to cost $150,000.

BIG STONE GAP, VA.—The Hagan Iron Co., recently incorporated, will commence operations at once. W. S. Rose is president and M. Munsey, secretary and treasurer of the company.

NORFOLK, VA.—The American Chain Co. of Virginia has awarded to the T. J. Pardary Construction Co. the general contract for a chain manufacturing plant to be 60 feet high and 90 x 560 feet in size. In addition, a brick testing shop 60 x 302 feet in size will be built. The company was incorporated recently with a capital of $1,000,000. Tazewell Taylor is president.

ST. JULIENS CREEK, VA.—The Boyle-Robertson Construction Co., Evans building, Washington, has been awarded the general contract by the government for a mine filling plant to cost $296,000.

Activities in the Central States

APPLETON, WIS.—The Northern Boiler & Structural Co. is having plans prepared by C. H. Williams, Green Bay, Wis., for a 1-story shop addition, 100 x 150 feet in size, of brick, steel and reinforced concrete. About $50,000 will be invested in the building and new equipment.

EAU CLAIRE, WIS.—The United States Switch Co. will erect a new forge shop at once, of reinforced concrete and brick, 60 x 130 feet in size. Plans are being prepared. T. C. Hadley is general manager.

EAU CLAIRE, WIS.—The Gillette Rubber Co. plans to erect a 5-story boiler house and transformer plant, 65 x 85 feet in size, to serve its new tire and rubber manufacturing plant.

FOND DU LAC, WIS.—The Eastern Wisconsin Electric Co., Sheboygan, Wis., will erect a $50,000 addition to its boiler house and steam generating plant. New equipment will be installed.

KENOSHA, WIS.—The Arneson Foundry Co., brass and iron castings, 319 Exchange street, is having plans prepared for a large addition to its foundry and machine shop.

LA CROSSE, WIS.—The La Crosse Tractor Co. will build an addition to its north side plant. Considerable new equipment will be installed.

MANITOWOC, WIS. — The Tinsel Mfg. Co. has awarded the contract for the erection of its new 3-story plant, 60 x 120 feet, to Walter W. Oeflein, North Milwaukee. The structure will be of reinforced concrete and brick. W. C. Protz is president and general manager.

MENASHA, WIS.—The Menasha Wire & Mfg. Co. will build a new plant and install new equipment for manufacturing wire cloth. Plans are being drawn, but work will probably not start before spring.

MILWAUKEE.—The J. Frederick Palmer Mfg. Co. has been chartered with $35,000 capital to manufacture machine tools by J. Frederick Palmer, N. C. Wooden and Herbert R. Manger.

MILWAUKEE.—W. G. Williams, 386 Jackson street, has been awarded the general contract for rebuilding and enlarging the depot and warehouse of the American Express Co. at the Chicago & North-Western station. The work will cost about $20,000.

MILWAUKEE.—The Standard Steel Co., recently incorporated with $300,000 capital, will erect a plant at Lake street and Hopkins road for the manufacture of farm equipment and concrete mixers. The plant will include a foundry, factory and assembling plant, and will cost about $350,000. E. J. DeGuenther is president.

MILWAUKEE.—The Milwaukee Harvester Works of the International Harvester Corp. will build a new forge shop, 75 x 147 feet, with a wing, 27 x 325 feet, and a new craneway, 70 x 80 feet. Paul F. Schryer, 784 Park street, is general superintendent.

PORT WASHINGTON, WIS.—The Turner Mfg. Co., manufacturer of gasoline engines, farm tractors, etc., has increased its capital stock from $150,000 to $250,000, to provide for new equipment and plant extensions. L. M. Turner is vice president and general manager.

WATERTOWN, WIS. — The Washington Cutlery Co. contemplates the erection of plant additions which will double its capacity.

WATERTOWN, WIS.—Plans for a new foundry and a machine shop extension are being prepared for the Otto Biefeld Co., which recently acquired a tract of land adjoining its plant. The improvements will cost about $35,000.

WAUPUN, WIS.—Libby, McNeil & Libby, Chicago, will build a box and package manufacturing plant. Architect P. L. Armon, Chicago, is preparing plans for a sawmill, 70 x 200 feet and a box factory, 50 x 250 feet, of reinforced concrete and brick.

WEST ALLIS, WIS.—The Kempsmith Mfg. Co., builder of milling machines and other machine tools, will erect a 100 x 200-foot extension to its plant, to take care of government contracts.

BENTON HARBOR, MICH.—The Chicago Stove & Range Co., 2033 South Clark street, Chicago, will build a 1-story foundry to cost $20,000. J. E. Fitzgerald is president.

DETROIT.—The Maxwell Motor Co. has awarded to the A. J. Smith Construction Co. the general contract for a brick, steel and reinforced concrete factory addition.

DETROIT.—The general contract for a 4-story factory building for the Eastern Motor Sales Co. has been let to the Otto Misch Co.

LANSING, MICH.—The Novo Engine Co. will add a foundry and a machine shop to its plant.

LANSING, MICH.—Allegheny Forge Co. has taken over the plant of the Emergency Drop Forging Co. and will add equipment to cost $50,000. J. Bell is manager.

PORT HURON, MICH. — The Mueller Mfg. Co., 512 Cerro Gordo street, Decatur, Ill., will place the contract shortly for a 1-story, 80 x 140-foot factory and power plant, to cost $200,000. J. Londoun & Hertzberg, 37 Toronto building, Toronto, are the engineers.

TRAVERSE CITY, MICH.—The Boardman River Electric Light & Power Co. will rebuild its plant. A recent explosion caused about $50,000 damage.

BLUE ISLAND, ILL.—The American Wire Fabrics Co., Charles K. Anderson, secretary, 208 South La Salle street, Chicago, will build a foundry to cost $200,000. F. D. Chase, Peoples Gas building, Chicago, is architect.

CHAMPAIGN, ILL.—G. N. Cushman, 815 West University avenue, tool manufacturer, will build an addition to his plant.

CHICAGO. — The Chicago Rawhide Co., 1301 Elston avenue, will build a boiler and engine house to cost $10,000. New machinery will be installed.

EAST ST. LOUIS, ILL.—The Durbin Automatic Train Connector Co., Pontiac building, St. Louis, will build a 2-story foundry to cost $150,000. V. S. Durbin Jr., is president.

PEORIA, ILL.—The Holt Mfg. Co., which has taken a government contract for munitions and tractors will build a $50,000 machine shop and other additions. V. Jobst & Sons are the contractors.

ROCKFORD, ILL.—The Mattison Machine Works has been incorporated with $300,000 capital by C. M. Mattison, C. L. Mattison and A. M. Mattison.

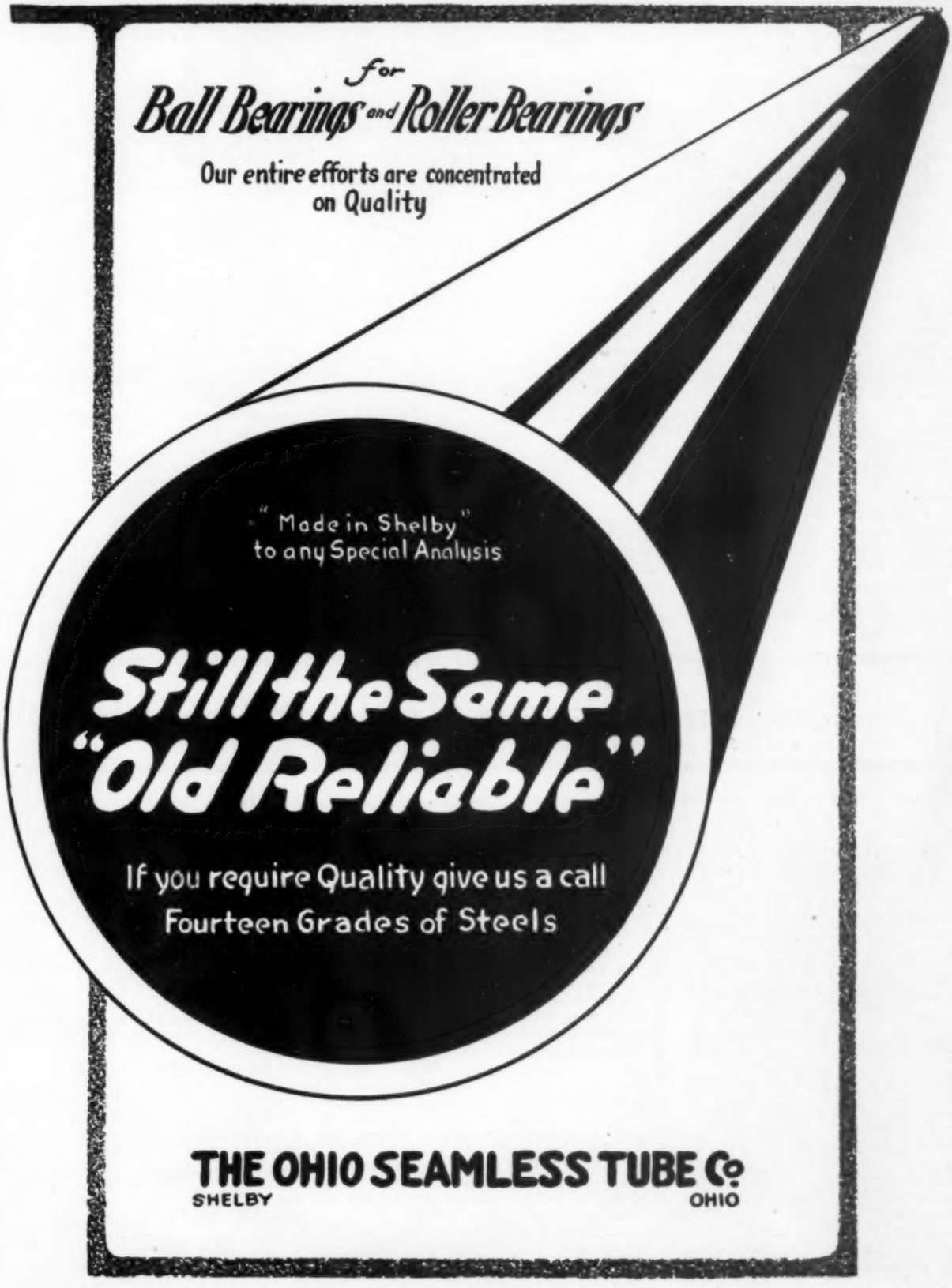
ANDERSON, IND.—The Laurel Automobile Co. has bought a site and will build a plant for the manufacture of valves.

FORT WAYNE, IND.—A. M. Allen & Co., architects, 1900 Euclid avenue, Cleveland, are preparing plans for a factory to be built by the Supreme Motor Corp., of which C. F. Jamison, 218 Union building, Cleveland, is president. The structure will cost about $300,000.

FORT WAYNE, IND.—The Polhamus Co. has been incorporated with $100,000 capital to manufacture tools, oil generators and automobile accesories by M. J. Polhamus and others.

GREENCASTLE, IND. — The American Zinc Products Co., recently incorporated with $1,000,000 capital, has purchased the buildings and equipment of a rolling mill, which it will convert into a 10-mill zinc plant. The in-

"OHIO SPECIAL"
Cold Drawn Seamless Steel Tubing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Ball Bearings and Roller Bearings
Our entire efforts are concentrated on Quality
"Made in Shelby" to any Special Analysis
Still the Same "Old Reliable"
If you require Quality give us a call
Fourteen Grades of Steels

THE OHIO SEAMLESS TUBE Co.
SHELBY OHIO

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corporators include D. W. Kerr, F. W. Stillwagon, W. Manning Kerr, R. A. Leitch and O. D. Gilmer.

HAMMOND, IND. — The Keith Railway Equipment Co. will build a 1-story factory 85 x 200 feet in size. F. D. Chase, Peoples Gas building, Chicago, is architect.

HAMMOND, IND.—Chapin & Co. will erect a $12,000 brick and steel factory on Columbia avenue.

INDIANAPOLIS.—R. H. Hassler, manufacturer of automobile appliances, will build a $17,000 foundry at 1531 Naomi street.

INDIANAPOLIS.—The Eagle Machine Co. has been incorporated with $15,000 capital to manufacture gages, fixtures and tools, by Charles W. Yount and others.

NEW CASTLE, IND.—The New Process File Co. has been incorporated with $10,000 capital by W. S. Crum, John W. Rodgers and A. A. Brown.

AKRON, O.—The Wellman-Seaver-Morgan Co. has awarded the contract for a 1-story brick and steel factory to the Geo. A. Fuller Co., 404 Swetland building, Cleveland.

AKRON, O.—The Williams Foundry & Machine Co., 60 South Cherry street, has let the contract for a $75,000 foundry to Clemmer & Johnson, High and Church streets.

ASHLAND, O.—The Norton Iron Works Co. has secured a site at Twenty-second and Front streets on which it will erect several buildings to house wire cloth machinery purchased recently.

BUCYRUS, O.—The Bucyrus Steel Co. will build a factory shortly. R. C. Penteel is president.

CINCINNATI.—The Darnall Steam Sterilizer Co. has been chartered with $140,000 capital by Sayward Galbraith, Albert E. DeArmond, Huber A. Lloyd and others.

CLEVELAND.—The Kanter Stamping & Mfg. Co. has been chartered with $250,000 capital by A. E. Bernsteen, L. J. Kanter, Wm. Kanter, M. E. Kanter and A. A. Kanter.

CLEVELAND. — The Parish & Bingham Co., West 106 street and Madison avenue, have awarded to the W. I. Thompson & Son Co., 6110 Euclid avenue, the general contract for a steel storage building. The estimated cost of the structure is $100,000.

CLEVELAND.—The Sam W. Emerson Co., 1900 Euclid avenue, has been awarded the contract for a $20,000 addition to the plant of the Interstate Foundry Co., East Sixty-first street and Roland avenue.

CLEVELAND.—The Paragon Machine Tool & Mfg. Co. has been chartered with $10,000 capital by F. W. Treadway, Norton McGiffin, E. G. Rushforth and others.

CLEVELAND.—The Smith-Monark Co. has been incorporated with $10,000 to build special machinery by Wilson G. Smith, Arthur H. Sampson, A. A. Lutton and others.

CLEVELAND.—The Warner & Swasey Co., 5800 Carnegie avenue, will build a 2-story addition 71 x 100 feet. The building will be of reinforced concrete and will cost about $45,000. The Osborn Engineering Co. will have charge of the construction.

CLEVELAND. — The Standard Specialties Mfg. Co. has been chartered with $25,000 capital by Isaac B. Wulken.

CLEVELAND.—The Elgin Brass Co. has been organized with $50,000 capital by John A. Mangan and others.

CLEVELAND.—The Grabler Mfg. Co. has awarded to the Sam W. Emerson Co., 1900 Euclid avenue, the general contract for a foundry to be added to its plant at 6565 Broadway. The building will be three stories high and 47 x 130 feet in size. Schwarzenberg & Gaede, 1900 Euclid avenue, are the engineers.

GALION, O. — The Lakewood-Galion Co. has been organized with $100,000 capital to manufacture machinery by Mark A. Copeland, F. B. Evarts, R. F. Nailler, O. E. Schultz and C. Verby.

VAN WERT, O.—The Van Wert Foundry Co. has awarded the contract for the erection of a new plant.

BENHAM, KY.—The United States Coal & Coke Co. will build an electric lighting plant.

MIDDLESBORO, KY.—J. A. Summers & Son are equipping a plant to repair electrically driven coal mine machinery.

RALEIGH, W. VA.—The Chesapeake & Ohio railroad plans to build an engine house.

WHEELING, W. VA.—The American Coal, Iron & Coke Co. has been incorporated with $100,000 capital to mine coal and iron ore and manufacture coke.

Southeast

ALAMO, TENN.—The Powells Non-Elevating Harvester Co. has been chartered with $100,000 capital to manufacture binders and other farming machinery. The incorporators are J. H. Agnew, D. E. Hardison, D. H. Powell Jr., J. Swell Jones, M. C. Dugan, S. H. Burnett and G. W. Pigue.

ALAMO, TENN.—D. H. Powell Jr., H. E. Hardison, J. H. Agnew and others, have incorporated Powell's Non-Elevating Harvester Co., with a capital stock of $100,000, to manufacture farming implements.

MEMPHIS, TENN.—The Southern Equipment Co. has been chartered with $25,000 capital to engage in the foundry business by R. H. McWilliams, N. M. Dickson, A. W. Fisher Jr., and D. B. Sweeney.

BIRMINGHAM, ALA.—The Ingalls Iron Works has been chartered with a capital of $250,000 by R. I. Ingalls, F. S. Gillespie, R. D. Leach and others.

SHEFFIELD, ALA.—The government will build a nitrate plant to cost $4,000,000. The J. G. White Engineering Co., 43 Exchange place, New York, is the architect.

New Business in Eastern Canada

PRINCE RUPERT, B. C.—S. E. Landry, Vancouver, B. C., expects to build a large shipbuilding plant. The proposed plant will be a branch of the Eastern Canadian Co., which is at present building ships for the British government.

VANCOUVER, B. C.—The Northern Construction Co., Inc., 606 Union Bank building, Winnipeg, Man., has been awarded the general contract for the erection of a depot for the Canadian Northern railroad, to cost $1,000,000.

FERGUS, ONT.—James Wilson & Sons, St. Andrew street, whose sawmill was damaged by fire will rebuild and will require machinery and equipment. About $50,000 will be expended.

HAMILTON, ONT.—P. H. Secord & Son, 133 Nelson street, Brantford, Ont., has been awarded the general contract for the erection of a $25,000 addition to the plant of the Frost Wire Fence Co.

NIAGARA FALLS, ONT. — The Concrete Stone & Coal Co. has been chartered to manufacture cement, cement products, etc., with $40,000 capital. Frank L. Boyle is in charge.

SAULT STE. MARIE, ONT.—The water commission will build a pump house and install equipment at a cost of $15,000. Manager Van Every is in charge.

TORONTO, ONT.—The Alloy Steel Works has been incorporated with $2,000,000 capital to make steel by Reginald H. Parmenter, Arthur J. Thomson and Samuel D. Fowler.

TORONTO, ONT.—The Gould Rotary Sewing Machine Co. has been chartered with $350,000 capital by Frank Regan, Edward Murphy, Theodore Lawrence and others.

TORONTO, ONT.—The Consolidated Metals Corp. has been organized to carry on a general mining and smelting business with $3,000,000 capital by Mervil Macdonald, Traders Bank building, David I. Grant, Edwin Smily and others.

WINONA, ONT.—The Royal Flying Corps, 56 Church street, Toronto, Ont., will build an aerodrome, including hangars, waterworks, sewage system, lighting system and concrete roadways, to cost $500,000. J. B. Carswell, 56 Church street, Toronto, is architect and engineer.

ILE PERROT, QUE.—Seven buildings of the plant of the Canadian Explosives Co. were damaged by explosion and fire Oct. 26. The loss is estimated at $200,000.

ST. ROMAULD, QUE.—The Dussault Co., Levis, Que., has had plans prepared and will soon commence to build a machine shop to cost $50,000. M. J. Et. Dussault, Wolfe street, Levis, is president.

MONTREAL, QUE.—The Canadian Steel Foundries, Inc., 120 St. James street, will build a 1-story frame addition to its plant to cost $6000.

BRIDGEWATER, N. S.—The Gray Marine Motor Co. will build a $50,000 plant for the manufacture of boilers, motors, engines, etc.

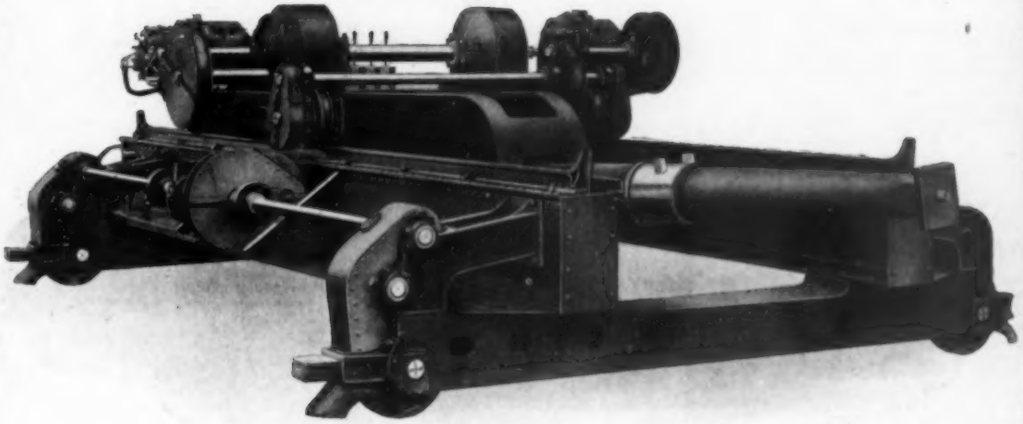
COMEAUVILLE, N. S. — The Comeau Shipbuilding Co., Inc., will build a shipbuilding plant to cost $100,000.

DARTMOUTH, N. S.—The Canadian Carbonate Co., 132 Hollis street, Halifax, N. S., will build a manufacturing plant to cost $40,000.

NEW GLASGOW, N. S.—The Nova Scotia Steel & Coal Co. will make extensions and repairs to its plant to cost $4,000,000. F. H. Crockard is general manager.

SAULNIERVILLE, N. S. — The Acadian Shipbuilding Co. will build a shipbuilding plant to cost $75,000. Denis D'Entremont, Meteghan River, Que., is secretary and treasurer.

ST. BONIFACE, MAN.—Armour & Co., Chicago, expect to build a meat packing plant to cost about $4,000,000. The site for the proposed plant covers 205 acres.



Low Type Chargers

The Wellman Patented Open Hearth Charging Machines have become famous by merit alone, not only in America, but also in practically every country where the Open Hearth Process is in use.

The low type charger pictured above is one of several built for the Indiana Steel Company. The machine's rigid structure makes for long life in heavy service; its general flatness of build allows free use of the ladle overhead, when furnaces are being charged with hot metal; yet its relatively high space between trolley frame and floor gives it easy passage over tools and other small objects.

For steel mill equipment of the better class, you can do no better than to consult with our engineers.

Principal Products of The W·S·M Company

Steel Plant Equipment:
Manipulators, Furnaces, Charging Machines, etc.
By-Product
Coke Oven Machinery.
Shipyard Cranes.
Hoisting and Mining Machinery.
Ore and Coal Handling Machinery.
Special Large Cranes.
Gas Producers, Gas Valves.
Hydraulic Turbines.
Johnson Hydraulic Valves.
Steel Castings.

WELLMAN SEAVER MORGAN COMPANY
CLEVELAND
OHIO U·S·A

Say you saw it in THE IRON TRADE REVIEW

Iron and Steel Prices

Corrected to Tuesday Noon

IRON ORE

Superior Ores, Per Ton, Lower Lake Ports.	
Old range Bessemer, 55 iron	$5.95
Mesabi Bessemer, 55 iron	5.70
Old range non-Bess., 51½ iron	5.20
Mesabi non-Bess., 51½ iron	5.05
Port Henry Ores, non-Bessemer, Per Unit,	
Delivered Eastern Pennsylvania.	
Old Bed, crude 55 iron	10.50c to 11.00c
Old Bed., concent., 65 iron	11.00c to 11.50c
Harmony, concent., 63 iron	11.50c to 11.75c
Lump (at mines)	$5.75c

WAREHOUSE PRICES

Steel bars, Chicago	4.50c
Steel bars, Cleveland	4.50c
Steel bars, Detroit	4.50c
Steel bars, Philadelphia	5.00c to 5.50c
Steel bars, New York	4.75c
Steel bars, St. Louis	4.55c
Steel bars, Cincinnati	4.65c
Steel bars, St. Paul	4.60c
Steel bars, Buffalo	4.60c to 5.10c
Iron bars, Chicago	4.50c
Iron bars, Cleveland	4.45c
Iron bars, Detroit	4.50c
Iron bars, St Louis	4.45c
Iron bars, Cincinnati	4.65c
Iron bars, Philadelphia	5.00c to 5.20c
Iron bars, New York	4.75c
Shapes, Chicago	5.00c
Shapes, Detroit	5.00c
Shapes, St. Louis	5.05c
Shapes, St. Paul	5.10c
Shapes, New York	4.75c
Shapes, Cleveland	5.00c
Shapes, Philadelphia	5.00c to 5.50c
Shapes, Buffalo	5.10c to 5.35c
Shapes, Cincinnati	5.15c
Plates, Chicago	7.00c
Plates, Detroit	7.00c
Plates, St. Louis	7.05c
Plates, St. Paul	7.10c
Plates, New York	7.00c
Plates, Cleveland	7.00c
Plates, Philadelphia	8.00c
Plates, Cincinnati	7.50c
No. 10 blue anl. sheets, Chi.	8.00c
No. 10 blue anl. sheets, Cleve.	5.00c
No. 10 blue anl., Buffalo	11.00c to 11.75c
No. 10 blue anl., sheets, St. L.	8.05c
No. 10 blue anl. sheets, Cinci.	8.00c
No. 10 blue anl. sheets, St. Paul	9.60c
No. 10 blue anl. sh., Detroit	8.00c
No. 28 black sheets, Chgo.	8.50c
No. 28 black sheets, Cleve.	5.75c
No. 28 black sheets, Cinci.	7.65c
No. 28 black, Detroit	7.50c
No. 28 black sheets, St. L.	8.55c
No. 28 black sheets, St. Paul	9.60c
No. 28 galv. sheets, Chgo.	11.00c
No. 28 galv. sheets, Cleve.	7.00c
No. 28 galv. sheets, Cinci.	9.65c
No. 28 galvanized, Detroit	8.50c
No. 28 galv. sheets, St. L.	10.09c
Hoops, Cleveland	8.00c
Hoops, Detroit	6.50c

IRON AND STEEL SCRAP

STEEL WORKS USE
(Gross Tons)

Bundled sheets, Pittsburgh	$22.00 to 23.00
Bundled sheets, Cleveland	21.25 to 22.00
Bundled sheets, Buffalo	19.00 to 20.00
City wrought, short, N. Y.	24.00
Frogs, switches, guards, St. L.	27.50 to 28.00
Heavy melting steel, Pitts.	30.00
Heavy melting steel, Buffalo	29.00 to 30.00
Heavy melting steel, Chgo.	28.50 to 29.00
Heavy melt'g steel, Cleveland	27.00 to 28.00
Heavy melting steel, Cinci.	25.00 to 25.50
Heavy melting steel, east. Pa.	26.00 to 28.00
Heavy melting steel, N. Y.	24.00
Heavy melting steel, St. L.	27.00 to 28.00
Heavy melting steel, Birming.	20.00 to 22.00
Hydraulic press. sheets, Cleve.	24.50 to 24.75
Hydraulic press. sheets, Pitts.	24.00 to 25.00
Hydraulic press. sheets, Chgo.	23.00 to 24.00
Low phos. steel, Buffalo	39.00 to 40.00
Low phos. steel, Pittsburgh	38.00 to 40.00
Low phos. steel, eastern Pa.	35.00 to 37.00
Shoveling steel, Chicago	28.50 to 29.00
Shoveling steel, St. Louis	25.00 to 26.50
Steel rails, short, Chicago	33.50 to 34.00
Steel rails, short, Cleveland	31.00 to 31.50
Steel rails, short, St. Louis	32.00 to 33.00
Steel rails, old, Birmingham	22.00 to 24.00
Stove plate, Cincinnati	15.50 to 16.00
Stove plate, St. Louis	16.50 to 17.00
Stove plate, N. J. points	18.50 to 19.00
Stove plate, Birmingham	17.50 to 18.00
Stove plate, Buffalo	20.00 to 21.00
Stove plate, eastern Pa.	21.50 to 22.50
Stove plate, Cleveland	19.00 to 20.00
Stove plate, Pittsburgh	20.00 to 21.00
Cast iron borings	11.00 to 12.00
(Net Tons)	
Boiler plate, cut, No. 1, Chgo.	$18.00 to 19.00
Boiler plate, cut, No. 1, St. L.	18.50 to 19.00
Bundled sheets, Cincinnati	16.50 to 17.00
Knuckles, coup., Chicago	31.00 to 32.00
Knuckles, coup., St. Louis	30.50 to 31.00
Springs, Chicago	36.50 to 37.50
Stove plate, Chicago	17.25 to 17.50

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$0.95
Newark, N. J.	3.50
Boston	3.70
Philadelphia	3.30
Pittsburgh	.95
St. Louis	3.18
Minneapolis, St. Paul	4.54
Buffalo to:	
Albany, N. Y.	$1.26
New England (rail)	3.10
New York and Brooklyn (rail)	3.10
Virginia furnaces to:	
Philadelphia	$3.27
New England	3.77
Brooklyn, Jersey City, Newark	3.52
Birmingham, Ala., to:	
Boston	6.00
Cincinnati	2.90
Chicago	4.00
Cleveland	4.00
Louisville, Ky.	2.65
Minneapolis, St. Paul	5.85
New York (r. and w.)	5.75
Philadelphia (r. and w.)	4.80
Pittsburgh	4.90
Savannah, Ga.	2.75
St. Louis	3.40
Chicago to:	
Des Moines	$2.80
Milwaukee	.50
Minneapolis, St. Paul	2.00
Moline, Ill.	1.40
Omaha	3.58
St. Louis	1.58
Ironton and Jackson, O., to:	
Chicago	$2.54
Cincinnati	1.26
Cleveland	1.62
Detroit	1.81
Indianapolis	1.58
Minneapolis, St. Paul	4.54
Duluth, Minn., to:	
Minneapolis-St. Paul	$1.25
Mayville, Wis.:	
Minneapolis-St. Paul	$1.75

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	19.5 cents
Philadelphia	18.5 cents
Boston	21.5 cents
Buffalo	16.0 cents
Baltimore	18.0 cents
Cleveland	13.5 cents
Cincinnati	17.0 cents
Chicago	21.5 cents
Detroit	15.7 cents
Minneapolis and St. Paul	32.9 cents
Denver	79.0 cents
St. Louis	23.6 cents
New Orleans	30 cents
Birmingham	45 cents
Pacific coast (all rail)	73.9 cents
Pacific coast (tin plate)	70 cents
Pacific coast, via Panama	61.0 cents

IRON MILL USE
(Gross Tons)

Busheling, No. 1, Cleveland	25.00 to 25.75
Busheling, No. 1, Buffalo	25.00 to 26.00
Busheling, No. 2, Buffalo	17.00 to 18.00
Busheling, No. 1, Pittsburgh	21.00 to 22.00
Cast borings, New York	16.50 to 17.00
Cast borings, eastern Pa.	19.00 to 20.00
Cast borings, Cleveland	18.00 to 18.50
Cast borings, Buffalo	19.00 to 20.00
Cast borings, Pittsburgh	20.00
City wrought, long, N. Y.	29.00 to 30.00
Forge flashings, small, Cleve.	23.50 to 24.00
Forge flashings, large, Cleve.	22.00 to 23.00
Forge No. 1, Eastern Pa.	21.50 to 22.50
Grate bars, Buffalo	20.00 to 21.00
Grate bars, Cleveland	19.25 to 20.50
Grate bars, N. J. points	18.50 to 19.00
Iron axles, Pittsburgh	42.00 to 44.00
Iron axles, Cincinnati	42.50 to 43.00
Iron axles, Cleveland	49.50 to 50.00
Iron axles, eastern Pa.	50.00 to 55.00
Iron axles, Buffalo	45.00
Iron rails, Chicago	35.00 to 36.00
Iron rails, Buffalo	37.00 to 38.00
Iron rails, Cincinnati	32.00 to 32.50
Iron rails, St. Louis	34.00 to 35.00
Iron rails, Cleveland	40.00 to 40.50
Machine turnings, Cleve.	17.14
Machine turnings, Buffalo	$18.00 to 18.50
Machine turnings, N. Y.	16.50 to 17.00
Machine turnings, Pitts.	20.00
Machine turnings, east. Pa.	18.00 to 19.00
Machine turnings, Birming.	17.00 to 18.00
Pipes and flues, Cleveland	23.75 to 24.75
R. R. mch. cast, No. 1, Buff.	27.00 to 28.00
R. R. wrought, 1, Buffalo	34.00 to 35.00
R. R. wrgt., No. 1, east, Pa.	35.00
Railroad wrought, 1, Clevee.	33.00 to 34.00
R. R. wrought, No. 1, Pitts.	35.00
R. R. wrgt. No. 1, Birming.	25.00 to 26.00
Wrought pipe, Buffalo	26.00 to 27.00
Wrought pipe, eastern Pa.	29.50 to 30.50
Wrought pipe, New York	25.00 to 26.00
(Net Tons)	
Angle bars, iron, Chicago	$35.50 to 36.00
Angle bars, steel, St. Louis	25.00 to 26.00
Arch bars & transoms, St. L.	40.50 to 41.50
Arch bars & transoms, Chgo.	36.00 to 37.00
Busheling, No. 1, Chicago	22.00 to 22.50
Busheling, No. 1, Cincinnati	21.00 to 21.50
Busheling, No. 1, St. Louis	21.50 to 22.00
Busheling, No. 2, Chicago	14.50 to 15.50
Cast borings, Cincinnati	17.14
Cast borings, St. Louis	16.50 to 17.00
Cast borings, Chicago	16.00 to 16.50
Cut forge, Chicago	28.00 to 28.50
Iron axles, St. Louis	42.50 to 43.00
Iron axles, Chicago	42.50 to 43.50
Machine turnings, Chgo.	16.50 to 17.00
Machine turnings, Cinci.	17.14
Machine turnings, St. L.	16.75 to 17.25
Pipes and flues, Chicago	19.00 to 20.00
Pipes and flues, St. Louis	20.50 to 21.00
Railroad wrgt., No. 1, Chgo.	31.00 to 32.00
Railroad wrgt., No. 1, Cinci.	28.50 to 29.00
Railroad wrgt., No. 1, St. L.	30.50 to 31.00
Railroad wrgt., No. 2, Chgo.	28.50 to 29.00
Railroad wrgt., No. 2, St. L.	28.00 to 28.50

IRON OR STEEL WORKS USE
(Gross Tons)

Axle turnings, Cleveland	$22.00 to 23.00
Axle turnings, Buffalo	25.00 to 26.00
Shafting, New York	34.00
Shafting, eastern Pa.	38.00 to 40.00
Steel car axles, Birmingham	32.00 to 33.00
Steel car axles, New York	47.00 to 48.00
Steel car axles, Buffalo	45.00
Steel car axles, Cleveland	46.00 to 47.00
Steel car axles, Pittsburgh	40.00 to 42.00
Steel car axles, eastern Pa.	50.00 to 55.00
(Net Tons)	
Shafting, St. Louis	30.50 to 31.00
Steel car axles, St. Louis	42.50 to 43.00
Steel car axles, Chicago	40.00 to 41.00

IRON FOUNDRY USE
(Gross Tons)

Car wheels, (iron), Pitts.	30.00 to 31.00
Car wheels, (steel), Pitts.	33.00 to 35.00
Car wheels, eastern Pa.	31.00 to 32.00
Car wheels, Buffalo	30.00 to 31.00
Car wheels, Chicago	27.00 to 28.00
Car wheels, St. Louis	29.00 to 30.00
Car wheels, Birmingham	25.00 to 30.00
Car wheels, Cleveland	26.00 to 26.50
Tram car wheels, Birming.	20.00 to 25.00
Cast, No. 1, Birmingham	20.00 to 25.00
Cast, 1, machy., N. J. points	32.00 to 33.00
Cast No. 1, Cleveland	24.75 to 25.75
Cast, 1, heavy, N. J. points	30.00
Cast, No. 1, eastern Pa.	30.00 to 31.00
Cast, No. 1, Pittsburgh	28.00 to 29.00
Malleable railroad, Cincinnati	20.50 to 21.00
Malleable railroad, Cleveland	27.00 to 27.50
Malleable railroad, Buffalo	28.00 to 29.00
Malleable railroad, Pittsburgh	28.00 to 29.00
Malleable railroad, east. Pa.	30.00 to 32.00
(Net Tons)	
Cast, No. 1, Chicago	23.00 to 23.50
Cast, No. 1, Cincinnati	24.00 to 24.50
Cast, No. 1, St. Louis	19.00 to 20.00
Malleable railroad, Chicago	27.00 to 28.00
Malleable railroad, St. Louis	25.00 to 26.00
Malleable agricultural, Chgo.	22.50 to 23.50

MISCELLANEOUS USES
(Gross Tons)

Reroll. rails, 5 ft. & ov., Pitts.	$34.00 to 36.00
Reroll. rails, 5 ft. & ov., Chgo.	35.50 to 36.50
Reroll. rails, 5 ft & ov., E. Pa.	28.00 to 32.00
Reroll. rails, 5 ft. & ov., St. L.	34.00 to 34.50
Reroll. rails, 5 ft. or ov., Cleve.	37.00 to 38.00
Rerolling rails, long, Birming.	37.50 to 38.50
(Net Tons)	
Boiler punchings, Chicago	31.50 to 32.00
Locomotive tires, Chicago	33.00 to 34.00
Locomotive tires, St. Louis	30.50 to 31.00